ANNA UNIVERSITY, CHENNAI

UNIVERSITY DEPARTMENTS

CURRICULUM – R 2009

B. ARCH.

I TO X SEMESTERS CURRICULUM AND SYLLABUS

SEMESTER I

CODE NO.	COURSE TITLE	L	T	P/S	C
THEORY					
MA9112	Mathematics	3	0	0	3
AD9101	History of Architecture & Culture I	2	0	0	2
AD9102	Building Materials I	2	0	0	2
AD9103	Environmental Science	3	0	0	3
THEORY CUM STUDIO					
AD9104	Art Studio	1	0	4	3
AD9105	Architectural Drawing I	1	0	4	3
STUDIO					
AD9106	Basic Design	0	0	14	7
	SUB TOTAL	**12**	**0**	**22**	**23**

SEMESTER II

CODE NO.	COURSE TITLE	L	T	P/S	C
THEORY					
AD9151	Mechanics of Structures – I	2	0	0	2
AD9152	History of Architecture & Culture II	2	0	0	2
AD9153	Building Materials II	2	0	0	2
THEORY CUM STUDIO					
AD9154	Building Construction I	1	0	4	3
AD9155	Theory of Architecture	2	0	4	4
AD9156	Architectural Drawing II	1	0	4	3
STUDIO					
AD9157	Architectural Design – I	0	0	14	7
	SUB TOTAL	**10**	**0**	**26**	**23**

SEMESTER III

CODE NO	COURSE TITLE	L	T	P/S	C
THEORY					
AD9201	Mechanics of Structures – II	2	0	0	2
AD9202	History of Architecture & Culture III	2	0	0	2
AD9203	Building Services I	3	0	0	3
AD9204	Climate and Built Environment	3	0	0	3
THEORY CUM STUDIO					
AD9205	Building Construction II	1	0	4	3
THEORY CUM PRACTICAL					
AD9206	Computer Aided Drafting	1	0	4	3
STUDIO					
AD9207	Architectural Design II	0	0	14	7
	SUB TOTAL	**12**	**0**	**22**	**23**

SEMESTER IV

CODE NO	COURSE TITLE	L	T	P/S	C
AD9251	Design of Structures – I	3	0	0	3
AD9252	History of Architecture & Culture IV	2	0	0	2
AD9253	Building Materials III	2	0	0	2
AD9254	Building Service II	3	0	0	3
AD9255	Site Surveying and Planning	3	0	0	3
THEORY CUM STUDIO					
AD9256	Building Construction III	1	0	4	3
STUDIO					
AD9257	Architectural Design III	0	0	14	7
	SUB TOTAL	**14**	**0**	**18**	**23**

SEMESTER V

CODE NO	COURSE TITLE	L	T	P/S	C
THEORY					
AD9301	Design of Structures II	3	0	0	3
AD9302	History of Architecture & Culture V	3	0	0	3
AD9303	Building Materials IV	2	0	0	2
AD9304	Building Services III	3	0	0	3
ADxxxx	Elective – I	x	x	x	3
THEORY CUM STUDIO					
AD9305	Building Construction IV	1	0	4	3
STUDIO					
AD9306	Architectural Design IV	0	0	16	8
	SUB TOTAL	**12**	**0**	**20**	**25**

SEMESTER VI

CODE NO	COURSE TITLE	L	T	P/S	C
THEORY					
AD9351	Design of Structures - III	3	0	0	3
AD9352	History of Architecture & Culture VI	3	0	0	3
AD9353	Professional Practice and Ethics I	3	0	0	3
AD9354	Architectural Acoustics	2	0	0	2
AD xxxx	Elective – II	x	x	x	3
THEORY CUM STUDIO					
AD9355	Architectural Detailing	1	0	4	3
STUDIO					
AD9356	Architectural Design – V	0	0	16	8
	SUB TOTAL	**12**	**0**	**20**	**25**

SEMESTER VII

CODE NO	COURSE TITLE	L	T	P/S	C
AD9401	Internship Program I	x	x	x	12
	SUB TOTAL	**0**	**0**	**0**	**12**

SEMESTER VIII

CODE NO	COURSE TITLE	L	T	P/S	C
AD9451	Internship Program II	x	x	x	10
AD9452	Dissertation	x	x	x	4
	SUB TOTAL	**0**	**0**	**0**	**14**

*Theory Courses / Theory cum Practical Courses

SEMESTER IX

CODE NO	COURSE TITLE	L	T	P/S	C
THEORY					
AD9501	Professional Practice and Ethics II	3	0	0	3
AD9502	Specifications and Estimation	3	0	0	3
AD9503	Human Settlements Planning	3	0	0	3
AD xxxx	Elective III *	x	x	x	3
AD xxxx	Elective IV *	x	x	x	3
THEORY CUM STUDIO					
AD9504	Urban Design	2	0	2	3
STUDIO					
AD9505	Architectural Design - VI	0	0	16	8
	SUB TOTAL	**11**	**0**	**18**	**26**

SEMESTER X

CODE NO	COURSE TITLE	L	T	P/S	C
AD xxxx	Elective V *	x	x	x	3
AD9551	Thesis	0	0	34	17
	SUB TOTAL	**0**	**0**	**34**	**20**

* Theory Courses / Theory cum Practical Courses

TOTAL NO OF CREDITS FOR COMPLETION OF SEMESTER : 214

Note:

L – Lecture period T- Tutorial Period **P**- Practical period/ **S** –Studio period **C** - Credits

LIST OF ELECTIVES

SEMESTER V & VI

SL.NO	COURSE CODE	COURSE TITLE	L	T	P/S	C
1	AD9021	Vernacular Architecture	3	0	0	3
2	AD9022	Energy Efficient Architecture	3	0	0	3
3	AD9023	Structure and Architecture	3	0	0	3
4	AD9024	Computer Applications in Architecture	1	0	4	3
5	AD9025	Theory of Design	3	0	0	3
6	AD9026	Interior Design	3	0	0	3
7	AD9027	Evolution of human settlements	3	0	0	3
8	AD9028	Art Appreciation	3	0	0	3

SEMESTER IX & X

SL.NO	COURSE CODE	COURSE TITLE	L	T	P/S	C
9	AD9071	Urban Housing	3	0	0	3
10	AD9072	Digital Art	1	0	4	3
11	AD9073	Principles of Traditional Indian	3	0	0	3
12	AD9074	Landscape & Ecology	3	0	0	3
13	AD9075	Construction Technology	3	0	0	3
14	AD9076	Architectural Conservation	3	0	0	3
15	AD9077	Contemporary Processes in Architecture	3	0	0	3
16	AD9078	Safety Systems and Building Management	3	0	0	3
17	AD9079	Advanced Structures	3	0	0	3
18	AD9080	Sustainable Planning and Architecture	3	0	0	3
19	AD9081	Earthquake Resistant Architecture	3	0	0	3

Note:

L – Lecture period **T-** Tutorial Period **P**- Practical period/ **S** –Studio period **C** - Credits

MA9112 **MATHEMATICS** **L S P/S C**
3 0 0 3

AIM

This course aims to develop the skills of the students in engineering mathematics. They will be trained on the basis of chosen topics of Mathematics necessary for effective understanding of engineering subjects. At the end of this 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

CONTENT:

UNIT I MATRICES 9

Eigenvalue problem – Eigenvalues and eigenvectors of real matrix – Characteristic equation – Properties of eigenvalues and eigenvectors – Cayley – Hamilton theorem (without proof) – Diagonalization by orthogonal transformation of a symmetric matrix.

UNIT II THREE DIMENSIONAL ANALYTICAL GEOMETRY 9

Direction cosines and ratio's – Angle between two lines – Equations of a plane – Equations of a straight line – Coplanar lines – Shortest distance between skew lines – Sphere – Tangent plane – Plane section of a sphere.

UNIT III GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS 9

Curvature – Cartesian and polar co_ordinates – Centre and radius of curvature – Circle of curvature – Involutes and evolutes – Envelopes.

UNIT IV FUNCTIONS OF SEVERAL VARIABLES 9

Function of two variables – Partial derivatives – Total derivative – Jacobians-Taylor's series of two variableMaxima and Minima – Constrained maxima and minima – Lagrange's Multiplier method.

UNIT V ORDINARY DIFFERENTIAL QUATIONS 9

Linear equations of second order with constant coefficients - Simultaneous first order linear equations with constant coefficients - Homogeneous equation of Euler type - Equations reducible to homogeneous form.

TOTAL: 45 PERIODS

REQUIRED READINGS

1. Veerarajan, Y., "Engineering Mathematics (for first year)', Second edition, Tata Mc Graw – 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. Kandaswamy, 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", Eight Edition, John Wiley and Sons (Asia) Ltd., Singapore, 2001.
4. 'Engineering Mathematics", Manikavasagan Pillai – S.V. Publication.
5. "Calculus and 3 Dimensions" – P.R. Vittal Margam Publications.

AD9101 HISTORY OF ARCHITECTURE AND CULTURE I L S P/S C
2 0 0 2

AIM:
To inform about the development of architecture in the Ancient Western World and the cultural and contextual determinants that produced that architecture.

OBJECTIVES:
- To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate
- To gain knowledge of the development of architectural form with reference to technology, style and character in the prehistoric world and in Ancient Egypt, West Asia, Greece and Rome.

CONTENT:

UNIT I PREHISTORIC AGE 4
Introducing concepts of culture and civilization - Paleolithic and Neolithic culture - art forms and evolution of shelter - megaliths - agricultural revolution and its impact on culture and civilization.

UNIT II ANCIENT RIVER VALLEY CIVILIZATIONS: EGYPT 4
Landscape and culture of Ancient Egypt- history - religious and funerary beliefs and practices - monumentality – tomb architecture: evolution of the pyramid from the mastaba - temple architecture: mortuary temples and cult temples
Great Pyramid of Cheops, Gizeh - temple of Ammon Ra, Karnak - temple of Abu Simbel (Rock Cut)

UNIT III ANCIENT RIVER VALLEY CIVILIZATIONS: MESOPOTAMIA 4
Urbanization in the Fertile Crescent - Sumerian, Babylonian, Assyrian and Persian culture - evolution of city-states and their character- law and writing - theocracy and architecture - evolution of the ziggurat - palaces

Ziggurat of Ur, Urnamu - Palace of Sargon, Khorsabad - Palace at Persepolis

UNIT IV CLASSICIAL PERIOD: GREECE 10
Landscape and culture of Greece- Minoan and Mycenaean cultures- Hellenic and Hellenistic cultures – Greek character- Greek polis and democracy – Greek city planning- - architecture in the archaic and classic periods – Domestic architecture; Public Buildings: Agora, stoas, theaters, bouletrion and stadias – Greek temple: evolution and classification- Parthenon and

Erecthion- orders in architecture: Doric, Ionic, Corinthian - optical illusions in architecture

UNIT V CLASSICAL PERIOD: ROME 8

Roman history: Republic and Empire- Roman religion and the Roman temple- Roman character- lifestyle- Roman urban planning- art and architecture as imperial propaganda: forums and basilicas- domestic architecture – structural forms, materials and techniques of construction - orders in architecture: Tuscan and Composite

Rome: Forum Romanum and other Imperial Forums, Enclosure and manipulation of space: Pantheon- Public buildings: Colloseum, Circus Maximus, Thermae of Caraculla.

TOTAL: 30 PERIODS

REQUIRED READINGS

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press, 1996.
2. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press, London, 1985.
3. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994

REFERENCES

1. Pier Luigi 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. Gosta,E.Samdstrp, Man the Builder, Mc.Graw Hill Book Company, New York, 1970.
4. Webb and Schaeffer; Western Civilisation Volume I; VNR: NY: 1962
5. Vincent Scully: Architecture; Architecture – The Natural and the Man Made: Harper Collins Pub: 1991.

AD9102 BUILDING MATERIALS I L S P/S C
2 0 0 2

AIM:

This course is devised to make students understand the basic materials of construction such as soil, lime, stone and rocks and other naturally occurring materials such as bamboo, palm, straw, etc.

OBJECTIVES:

- To have an understanding of the properties, characteristics, strength, manufacture, processing and application of materials such as soil, lime, rocks and stones.
- To inform the properties, characteristics and use of bamboo, palm, straw, etc. and methods of preservation and treatment.
- To sensitize the students to the use of these naturally occurring materials in the context of creating a green architecture.

CONTENT:

UNIT I SOILS 6

Fundamentals of Soil Science, Types of soils, Principles of Soil Stabilization, Charactertics of core, Types of Stabilizers, Requirements and Types of mudwall building and surface protection.

UNIT II LIME **4**

Types of lime, Classification of lime, comparison between fat lime and hydraulic lime, Manufacturing process slaking, Hardening – Testing and Storage, Lime putty, Precautions in handling and uses of lime.

UNIT III BAMBOO AND OTHER MATERIALS **10**

Bamboo – Bamboo as plant classification, species, geographical distribution, Anatomy of Bamboo, Properties, strength, processing, harvesting, working of Bamboo tools – Treatment and preservation of Bamboo and uses of Bamboo.

Cane, gate, coir, coconut - Growth, Form, Shape, Leaves, Flowering, Propagation

Roofing materials – Thatch, grass, Bamboo, reeds – Basics

UNIT IV STRAW BALES **6**

Straw as a building material, - Basics, Fire, moisture, insects and pests proof.

UNIT V ROCKS AND STONES **4**

Classification of rocks, Classification, Sources, Seasoning, Quarrying of stones, Dressing, Characteristics of stones, Testing of stones, Common building stones and their uses. Preservation of stones Deterioration of stones, Durability, Preservation, Selection of stones, Artificial stones.

TOTAL: 30 PERIODS

REQUIRED READINGS

1. P.C. Varghese, Building Materials, Prentice Hall of India put Ltd New Delhi 110001, 2005.
2. S. C. Rangwala, Engineering Materials, Character Publishing house, Anand – 388 001, India, 2002.
3. Dunkelberg (K), Bambus – Bamboo, Bamboo as a Building Material, Karl Kramer Verlag Stuttgart, 2000.
4. UNO, Use of Bamboo and reeds in construction – UNO publications
5. Chris magword and petermack, straw bale building, New society publishers , Canada, 2000.

REFERENCES

1. S.K. Duggal, Building materials, Oxford and IBH publishing Co, put, Ltd, New Delhi 110001, 1997.
2. R. F spencke and D.J.Cook. Building Materials in Developing Countries – John Wiley and sons 1983.
3. Rural Construction NBO – New Delhi

AD9103 ENVIRONMENTAL SCIENCE **L S P/S C**

3 0 0 3

AIM:

To sensitize the students to understand the diversities and complexities in natural environments and the need for intervention in the context of global warming and climate change.

OBJECTIVES:

- To provide an overview of natural resources, various ecosystems & its characteristics and conservation of biodiversity.

- To create an awareness about impact of human activities such as pollution and its consequences.
- To stress the importance of environmental protection and sustainable development.

CONTENT:

UNIT I THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES 3

Definition, Scope and importance;
Need for public awareness.

UNIT II RENEWABLE AND NON-RENWABLE RESOURCES 6

Natural resources and associated problems

(a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal peoples.
(b) Water resources: Use and over-utilization of surface and ground water, dams-benefits and problems.
(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
(d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
(f) Land resources: Land as a resource, land degradation, man included landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

UNIT III ECOSYSTEMS 6

Concept of ecosystem.

- Structure and function of an ecosystem.
- Procedures, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem:
  (a) Forest ecosystem
  (b) Grassland ecosystem
  (c) Desert ecosystem
  (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT IV BIODIVERSITY AND ITS CONSERVATION 6

- Introduction - Definition: Genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity: Consumptive use, productive use, social, ethical, and aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot spots of biodiversity.
- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT V ENVIRONMENTAL POLLUTION 6

Definition

- Causes, effects and control measures of:
  (a) Air pollution
  (b) Water pollution
  (c) Soil pollution
  (d) Marine pollution
  (e) Noise pollution
  (f) Thermal pollution
  (g) Nuclear pollution
- Soil waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management: Floods, earthquake, cyclone and landslides.

UNIT VI SOCIAL ISSUES AND THE ENVIRONMENT 6

- From unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and re habitation of people; its problem and concerns. Case studies.
- Environmental ethics: Issues and possible solutions.
- Climate changes, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environmental protection Act.
- Air (prevention and control of Pollution) Act.
- Water (prevention and control of Pollution) Act.
- Wildlife protection Act.
- Forest conservation Act.
- Issues involved in enforcement of environmental legislation.
- Public awareness.

UNIT VII HUMAN POPULATION AND THE ENVIRONMENT 6

- Population growth, variation among nations.
- Population explosion - Family Welfare Programme.
- Environment and human health.
- Human rights.
- Value education.
- HIV/AIDS
- Women and Child Welfare.
- Role of information Technology in Environment and human health.
- Case studies.

UNIT VIII FIELD WORK 6

- Visit to a local area to document environmental asserts-river/ forest/ grassland/ hill/ mountain.
- Visit to a local polluted site - Urban/ Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds.

- Study of simple ecosystem-pond, river, hill slopes, etc. (Field work Equal to 5 lecture hours).

TOTAL: 45 PERIODS

REQUIRED READINGS:

1. Miller T.G. Jr., Environmental Sciences, Wadsworth Publishing Co. (TB)
2. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.

REFERENCES:

1. Hawkins.R.E, Encyclopedia of Indian Natural History, Bombay Natural History Sdociety, Bombay (R).
2. Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assesment. Cambridge Univ. Press 1140p.
3. McKinney, M.L & Schoch, R.M. 1996. Environmental Science System & Solutions, Web enhanced edition. 639p.
4. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R).

AD9104 ART STUDIO L S P/S C
1 0 4 3

AIM:

To develop presentation skills, visual expression and representation, imaginative thinking and creativity through a hands on working with various mediums and materials.

OBJECTIVES:

- To familiarize the students with the various mediums and techniques of art through which artistic expression can be achieved
- To familiarize students with the grammar of art by
- Involving them in a series of free hand exercises both indoor and outdoor to understand form, proportion, scale, etc
- Involving them in a series of exercises which will help them experiment with form and volume.
- To involve students in a series of exercises which will look at graphic and abstract representations of art.

CONTENT:

UNIT I DRAWING 15

Introduction to art – Elements and principles of drawing – Types of drawing – Visual effects of drawing – Scale drawing – Composition – Approach to sketching – Study of light, shade and shadow.

Exercise involving Indoor and out door sketching – Spot sketching - Drawing from imagination – Study of 3 D effects through light and shade from nature – Tools and materials – Illustration – Study of human being and mobiles.

UNIT II PAINTING I 15

Introduction of painting – Colour – Properties of colour – Colour schemes – Types of colours - Application and visual effects of colour. Exercise involving Study of colour – Properties of paper, brush and other tools – Basic washes – 3D effects from still-life, nature and built environment using mono chromatic and multi colour.

UNIT III PAINTING II **20**

Indoor and out door painting – Rendering techniques

Exercise involving Water colour – Water soluble colour pencil – Tempra – Acarali – Water soluble oil colour – Oil colour – Pen and ink – Brush – Air brush – Mixed mediums – Study of multi colour and 3D effects from nature and built environment.

UNIT IV SCULPTURE **15**

Introduction of sculpture –Sculpture using various materials such as clay, plaster of Paris, paper mache, and wire.

UNIT V APPLIED ART **10**

Graphic representations – Visual composition and Abstraction- Exercises involving Logo design, collage, calligraphy and printing.

TOTAL: 75 PERIODS

REQUIRED READINGS

1. Webb, Frank, "The Artist guide to Composition", David & Charles, U.K., 1994.
2. Drawing a Creative Process", Ching Francis, Van Nostrand Reinhold, New York, 1990.
3. Alan Swann, Graphic Design School, Harper Collins, 1991.

REFERENCES

1. Moivahuntly, "The artist drawing book", David & Charles, U.K., 1994.
2. Arundell (Jan) Exploring sculpture, Mills and Boon, London/Charles, T. Brand Ford Company, U.S.A.
3. The art of drawing trees, heads, colours, mixing, drawing, landscape and painting, water colour, oil colour, etc. – The Grumbacher Library Books, New York – 1996.
4. Caldwell peter, "Pen and Ink Sketching", B.T. Bats ford Ltd., London, 1995**.**

AD9105 ARCHITECTURAL DRAWING I **L S P/S C**
1 0 4 3

AIM:

To introduce the concepts and fundamentals of architectural drawing to develop representation skills and to nurture the understanding of the nature of geometrical forms and simple building forms and to teach the language of architectural and building representation.

OBJECTIVES:

- To involve students in a number of exercises that will help them to understand the nature of geometrical forms in terms of drawing plane and solid projections. .
- To involve students in a number of exercises that will help to understand the representation of 3 Dimensional forms through isometric and axonometric drawings.
- To introduce basic measured drawing of simple objects and building components.

CONTENT:

UNIT I GEOMETRICAL DRAWING: PLANE GEOGRMETRY 12

Introduction to fundamentals of drawing/drafting - Construction of lines, angles - scales and area. Construction of plane - circles, tangent, curves and conic sections – construction and development of planar surface – square, rectangle, polygon etc.

UNIT II GEOMETRICAL DRAWING :ORTHOGRAPHIC PROJECTION OF PLANAR SURFACES 12

Isometric, axonometric and multi-view projection of geometric shapes namely square, circle, and polygon etc.

UNIT III GEOMETRICAL DRAWING: SOLID GEOMETRY 12

Introduction to simple projection – projection and development of solid surfaces – sections of solid, true shape of section and penetration of solids.

UNIT IV GEOMETRICAL DRAWING: ORTHOGRAPHIC PROJECTION OF SOLIDS 12

Isometric, axonometric and multi-view projection of solid – cube, prism combination of solid etc.

UNIT V MEASURED DRAWING 27

Introduction to fundamentals of measured drawing, line value, lettering, drawing representation, format for presentation methods and technique of measuring buildings and their details. Measured drawing of simple objects like furniture, detailing in terms of construction, ornamentation, measured drawing of building components like column, door, windowl, cornice, etc.

TOTAL: 75 PERIODS

REQUIRED READINGS

1. IH. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004.
2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.

REFERENCES

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

AD9106 BASIC DESIGN L S P/S C
0 0 14 7

AIM:

To understand the elements and principles of Basic Design as the building blocks of creative design through exercises that will develop the originality, expression, skill and creative thinking.

OBJECTIVES:

- To involve students in a number of exercises to understand the grammar of design and visual composition.

- To enable the understanding of 3 D Composition by involving students in a number of exercises which will help generation of a form from a two dimensional / abstract idea.
- To enable the understanding of the relationship between the grammar of design and architecture by involving the students in seminars/ workshops and simple exercises which will look at building form analytically.

CONTENT:

Introduction to Architectural Design through Basic Design – Elements of Design :
Properties, qualities and characteristics of point, line, direction shape, form, colour and texture – Principles of Design: Scale, Proportion, Balance, Harmony, Rhythm and Contrast.

The course shall be conducted by giving a number of exercises in the form of design studios, seminars and creative workshops that are aimed at teaching the following:

i) Elements and Principles of Visual Composition using point, line, shape.
ii) Exploring colour schemes and their application in a visual composition and in Architectural forms and spaces.
iii) Study of texture and schemes of texture both applied and stimulated and their application
iv) Study of linear and Planar forms using simple material like Mount Board, metal foil, box boards, wire string, thermocol etc.
v) Study of Solids and voids to evolve sculptural forms and spaces and explore the play of light and shade and application of color.
vi) Study of fluid and plastic forms using easily mouldable materials like clay, plaster of paris etc.
vii) Analytical appraisal of building form in terms of visual character, play of light and shade, solids and voids etc.
viii) Application of Basic design in Architectural Design through the manipulation of line, plane, solid and voids and application of texture colour, proportion etc.

TOTAL: 210 PERIODS

REQUIRED READINGS

1. Owen Cappleman & Michael Jack Jordon, Foundations in Architecture : An Amotated Anthology of Beginning Design Project, Van Nostrand Reinhold New York, 1993.
2. Charles Wallschlacgerm & Cynthia Busic-Snyder, Basic Visual Concepts and Principles for Artists, Architects and Designers, Mc Graw Hill, New York 1992.

REFERENCES

1. 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.
4. Elda Fezei, Henny Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
5. C.Lawrence Bunchy - Acrylic for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972.

AD9151 MECHANICS OF STRUCTURES I L S P/S C
2 0 0 2

AIM:

To make students aware of how structural resolutions become important in realization of architecture design concept. At this stage, students shall be exposed to forces, moments, and resolution that are to be resolved. Concepts of structures, and enable students to solve basic, simple problems.

OBJECTIVES:

- To enable a student to understand the effect of action of forces on a body and the concept of equilibrium of the body through exercises.
- To determine the internal forces induced in truss members due to external loads by working out problems.
- To calculate the sectural properties (centroid, moment of inertia, section modulus and radius of gyration) for various sections by working out problems.
- To study the struss – strain behaviors of steel and concrete due to axial loads and to determine the stresses and strains developed in solids due to external action through select problems.
- To drive the relationship between elastic constants and solving problems.

CONTENT:

UNIT I FORCES AND STRUCTURAL SYSTEMS 5

Types of force systems - Resultant of forces-lami's theorem- principle of moments vargion's theorem - principle of equilibrium (no reaction problems) - simple problems

UNIT II ANALYSIS OF PLANE TRUSSES 5

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

UNIT III PROPERTIES OF SECTION 8

Centroid- Moment of Inertia - Section modules – Radius of gyration - Theorem of perpendicular axis - Theorem of parallel axis –simple problems.

UNIT IV ELASTIC PROPERTIES OF SOLIDS 6

Stress strain diagram for mild steel, High tensile steel and concrete - Concept of axial and volumetric stresses and strains. (excluding composite bar)

UNIT V ELASTIC CONSTANTS 6

Elastic constants - Relation between elastic constants - Application to problems.

TOTAL: 30 PERIODS

REQUIRED READINGS

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, Lakmi Publications, Delhi 1994.
2. S. Ramamrutham, 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.
5. A.P.Dongre – Structural Engineering for Architecture, Scitech Publications Ltd.

AD9152 HISTORY OF ARCHITECTURE AND CULTURE II L S P/S C
2 0 0 2

AIM:

To inform about the development of architecture in India from ancient times to its evolution through history under two religious movements- Buddhism and Hinduism- and the cultural and contextual determinants that produced that architecture.

OBJECTIVES:

- To understand Indian architecture as evolving within specific cultural contexts including aspects of society, religion, politics and climate
- To gain knowledge of the development of architectural form with reference to technology, style and character in the Indus valley Civilization, Vedic period and manifestation of Buddhist and Hindu architecture in various parts of the country.

CONTENT:

UNIT I ANCIENT INDIA 4

Indus Valley Civilization: culture and pattern of settlement.- Aryan civilization – theories and debates of origin- origins of early Hinduism - Vedic culture - Vedic village and rudimentary forms of bamboo and wooden construction - origins of Buddhism and Jainism**.**

UNIT II BUDDHIST ARCHITECTURE 6

Evolution of Buddhism, Buddhist thought, art and culture - Hinayana and Mahayana Buddhism - interaction of Hellenic & Indian Ideas in Northern India - evolution of building typologies- the stupa, vihara and the chaitya hall - symbolism of the stupa - architectural production during Ashoka's rule Ashokan Pillar, Sarnath - rock cut caves at Barabar - Sanchi Stupa- rock cut architecture in Ajanta and Ellora - Karli - viharas at Nasik - Rani gumpha, Udaigiri - Takti Bahai, Gandhara.

UNIT III EVOLUTION OF HINDU TEMPLE ARCHITECTURE 6

Hindu forms of worship – evolution of temple form - meaning, symbolism, ritual and social importance of temple - categories of temple - elements of temple architecture - early shrines of the Gupta and Chalukyan periods Tigawa temple - Ladh Khan and Durga temple, Aihole - Papanatha, Virupaksha temples, Pattadakal - Kailasanatha temple, Ellora.

UNIT IV TEMPLE ARCHITECTURE - SOUTHERN INDIA 10

Brief history of South India - relation between Bhakti period and temple architecture - of temple towns - Dravidian Order - evolution and form of gopuram Rock cut productions under Pallavas: Shore temple, Mahabalipuram and Kailasanatha temple, Kanchipuram - Chola Architecture: Nartamalai, Brihadeeswara, Gangaikonda Cholapuram and Darasuram temples -– temple gateways of Madurai and Chidambaram - temple towns: Madurai, Srirangam and Kanchipuram Hoysala architecture: Belur and Halebid

UNIT V TEMPLE ARCHITECTURE -NORTHERN INDIA 4

Temple architecture of Gujarat, Orissa, Madhyapradesh and Rajasthan - their salient features Lingaraja Temple, Bhuvaneswar - Sun temple, Konarak. - Somnatha temple, Gujarat, Surya kund, Modhera Khajuraho, Madhyapradesh - Dilwara temple, Mt. Abu

TOTAL: 30 PERIODS

REQUIRED 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, 2003.
3. Christoper Tadgell, The History of Architecture in India from the Dawn of civilization to the End of the Raj, Longmon Group U.K.Ltd., London, 1990.

REFERENCES

1. A.Volwahsen, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
2. George Michell, The Hindu Temple, BI Pub., Bombay, 1977.
3. Stella Kramrisch The Hindu Temple
4. K.V. Soundarajan, Art and Architecture of South India
5. George Michell Ed, Temple Towns of Tamil Nadu
6. History of Indian Philosophy, Dasgupta

AD9153 BUILDING MATERIALS II

L	S	P/S	C
2	0	0	2

AIM:

This course is devised to make students understand some basic materials of construction such as brick, clay products and timber and its various market forms.

OBJECTIVES:

- To have an understanding of the properties, characteristics, strength, manufacture, processing and application of materials such as brick and other clay products.
- To inform the properties and characteristics of timber, its conversion, preservation and uses.
- To inform of the various market forms of timber, their production, properties and application in the building industry.

CONTENT:

UNIT I BRICKS **6**

Classification of bricks, characteristics, ingredients of bricks – Manufacture of bricks. Classification of bricks – Forms of bricks – Testing of bricks – Bonding in bricks and its types.

UNIT II CLAY PRODUCTS **6**

Manufacture of burnt clay bricks, paving bricks, hollow bricks – terracotta, porcelain, stoneware, earthenware and glazing and their uses.

Roofing materials - Manufacture and uses of Mangalore tiles, pot tiles, pan tiles

UNIT III TIMBER AND TIMBER PRODUCTS **6**

Classification of trees, structure of trees, Defects in timber, characteristics, seasoning of timber, Defects and diseases, Decay of timber, Preservation, Fire resistance, Conservation of timber, Storage of timber, Uses of timber of properties.

UNIT IV TIMBER PRODUCTS **6**

Market forms of timber, Industrial timber, - Veneers, Plywoods, Laminates, advantages and Blockboard uses.

UNIT V PAINTING AND VARNISHING IN TIMBER 6

Composition, characteristics, preparation, painting different surfaces Enamels, Varnishing, Miscellaneous paints, defects, uses and cost of materials.

TOTAL: 30 PERIODS

REQUIRED READINGS

1. S. C. Rangwala, Engineering Materials, Character Publishing house, Anand – 3 8 8 001, India, 2002.
2. S.K. Duggal, Building materials, Oxford and IBH publishing Co, put, Ltd, New Delhi 110001, 1997
3. B. Reshpande, materials and construction oriental watchman publishing House Poona II

REFERENCES

1. P.C. Varghese, Building Materials, Prentice Hall of India put Ltd, New Delhi 110001, 2005.
2. R.J. Spencke and S.J. Cook, Building materials in developing countries, John Wiley and sons 1983.
3. To have an understanding of the various finishes that can be applied to timber.

AD9154 BUILDING CONSTRUCTION I L S P/S C
1 0 4 3

AIM

This course is devised to provide an understanding of the various components that go into the making of a building shell and to focus on the various technicalities of construction and construction detail using some of the basic building materials.

OBJECTIVES

- To involve students in a number of drawing exercises that will analyze the various building components in a simple load bearing structure.
- To involve students in a number of drawing exercises that will look at the design and detail of simple structures using naturally occurring materials such as mud, bamboo, straw, etc.
- To involve students in a number of drawing exercises that will look at the design and detail of various building components in a simple load bearing structure using stone.

CONTENT

UNIT I INTRODUCTION 8

Functional requirements of building and its components, introduction to concept of load bearing and framed structures. Exercises – involving the same.

UNIT II SOILS 16

Design and construction techniques Foundations – basic rules, design details, Base courses – basic rules, design details walls – basic principles – Design of openings, arches vaults, floors and roofs. Design of buildings – using rammed earth, Adobe blocks, Compressed blocks – Exercises of the above

UNIT III BAMBOO 16

Design and Construction Techniques Foundations – Basic rules, design details, Base courses – Basic rules, design details. Design of walls, openings, floors and roofing- Thatch, grass, bamboo, reed. Design Exercises of buildings using bamboo for building components, structural application of bamboo – Arched, Barrel vaults, weave structures.

UNIT IV STRAW BALES 10

Design and Construction Techniques Load bearing, Post and Beam systems, Foundations systems, Roofing options. Doors, Window details – stacking and plastering. Design Exercises : using straw bales for building components.

UNIT V STONE 10

Stone foundation, Masonry (Ashlar, rubble, cavity composite walls) flooring, coping, sills, lintels, corbels, arches, cladding. Design Exercises – Using stone for building components.

TOTAL: 60 PERIODS

REQUIRED READINGS

1. S.P Arora and S.P. Bindra, Text book of Building Construction, ganpat Rai publications (P) Ltd New Delhi - 110002, 2005.
2. Klans Dukeeberg, Bambus – Bamboo, Karl Kramer verlag Stuttgart Germany, 2000.

REFERENCES

1. Don A. Watson Construction Materials and Processes Megraw Hill 1972, WB Mckey Building construction vol 1,2, Longman UK 1981.
2. Barry, the construction of buildings Affiliated East West press put Ltd New Delhi 1999.
3. Francisa D.K. Ching Building Construction illustrated John Wiley & Sons 2000.

AD9155 THEORY OF ARCHITECTURE L S P/S C
2 0 4 4

AIM

The course is devised to introduce architecture as a discipline, to develop sensitivity towards the aesthetic and psychological experience of form and space and to make aware of how meaning is created in architecture.

OBJECTIVES

- To introduce architecture as a discipline and to sensitize the students to the various functional aspects of architecture while looking at factors that contribute to the meaning of architecture and its visual aesthetic.
- To introduce the students to the ordering elements and principles of architecture to understand the vocabulary of the architectural language through the analysis of selected buildings.
- To understand not only the organization of form and space but to understand the organizing elements in a building through the case of selected buildings.
- To inform students of how meaning is created in architecture by analyzing cases of buildings, architects work(s), architectural styles.
- To engage students in seminars, case study analysis, workshops, etc that will look analytically at architecture.

CONTENT

UNIT I INTRODUCTION TO ARCHITECTURE AND MEANING IN ARCHITECTURE 10

Definitions of Architecture- context for architecture as satisfying human needs- functional, aesthetic and psychological –architecture as a discipline- introducing the various functional aspects of architecture: site, structure, skin, services, use, circulation etc.

Introduction to the factors that lend meaning to architecture- architectural expression and symbolism- character and style- movements, philosophies, ideologies and theories- meaning and interpretation of architecture

UNIT II ORDERING ELEMENTS AND PRINCIPLES OF ARCHITECTURE 20

Point, line, plane, form, shape, pattern, light, colour, texture – understanding the elements with respect to architecture
Exercises involving the above

Detailed study of the visual and emotional effects of geometric forms and their derivatives: sphere, cube, pyramid, cylinder and cone – Transformation of forms, Articulation of forms – mass-space/solid-void effects, articulation of edges, corners, surfaces
Exercises involving the above

Proportion, scale, balance, rhythm, axis, symmetry, hierarchy, datum, unity, harmony, dominance with respect to architecture
Exercises involving the above

UNIT III ORGANISATION OF FORM AND SPACE 20

Spatial relationships: space within space, interlocking spaces, adjacent spaces, space linked by a common space - spatial organization: centralised, linear, radial, clustered, grid - form- space relationships-
Exercises involving the above

UNIT IV CIRCULATION AND IN TOTALITY 20

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

UNIT V EXPERIENCING ARCHITECTURE 20

Understanding architecture in totality in terms of the various aspects through first hand experience, analysis and interpretation using the case of a building, architectural style, work(s) of contemporary architects
Seminar in the above **TOTAL: 90 PERIODS**

REQUIRED READINGS

1. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 2007.
2. Simon Unwin, Analysing Architecture, Rouledge, London, 2003.
3. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973.

REFERENCES:

1. Leland M.Roth - Understanding Architecture, its experience history and meaning, Craftsman house, 1994.
2. Steen Eiler Rasmussen - Experiencing architecture, MIT Press, 1964
3. Peter von Meiss -Elements of architecture - from form to place, Spon Press 1992.
4. Rudolf Arnheim- The dynamics of architectural form, University of California Press 1977
5. Neils Prak, Mounton & Co 1968 The language of Architecture

6. Paul Alan Johnson - The Theory of Architecture - Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.
7. Helen Marie Evans and Carla David Dunneshil, An invitiation to design, Macmillan Publishing Co. Inc., New York, 1982.

AD9156 ARCHITECTURAL DRAWING II L S P/S C
1 0 4 3

AIM:
To develop the skill of representation in advanced drawing techniques and building documentation.

OBJECTIVES:
- To involve students in a number of exercises that will help them develop the skill of representation in advance drawing techniques involving perspective and sciography.
- To involve students in a number of exercises that will help to understand the measured drawing method to document buildings of architectural interest using simple and advance techniques of representation.

CONTENT:

UNIT I SCIOGRAPHY 10
Principles of shade and shadow – construction of shadow of simple geometrical shapes – construction of sciography on building, shadows of architectural elements.

UNIT II PERSPECTIVE: SCIENTIFIC METHOD 25
Characteristic of perspective drawing. Concepts and methods of perspective drawing. One point and two point perspective of simple geometrical shapes like cube, prism, combination of shapes, simple one, two and three-point perspective of building interiors and exteriors. Adding of figures, trees furniture etc., shade and shadows and applying rendering techniques.

UNIT III PERSPECTIVE: SHORT OUT METHOD 15
Introduction to short cut perspective method. Adding of figures, trees furniture etc., shade and shadows and applying rendering techniques.

UNIT IV MEASURED DRAWING: HISTORIC DOCUMENT STUDY 10
Combined study of historic document along with small building by using simple measuring tools like tapes, photograph etc.

UNIT V MEASURED DRAWING: DOCUMENTATION 15
Documentation of a complete building of a special interest in terms of history, building construction, architectural excellence or technology.

TOTAL: 75 PERIODS

REQUIRED READINGS:
1. John M.Holmes, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1954.
2. Robert W.Gill, Basic Perspective, Thames and Hudson, London, 1974.
3. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964.
4. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, NY 1975

REFERENCES:

I. **MEASURED DRAWING**

1. Claude Batley, Indian Architecture, D.B.Taraporevale Sons and Co., Ltd., Bombay
2. William Kirby Lockard, Drawing as a Means to Architecture, Van Nostrand, Reinhold Company, New York.
3. George A Dinsmore, Analytical Graphics – D.Van Nostrand, Company Inc., Canada.

II. **PERSPECTIVE**

4. Interiors: Perspective in Architectural Design Graphic - SMA Publishing Co. Ltd., Japan, 1967.

III. **SCIOGRAPHY**

5. Ernest Norling, Perspective drawing, Walter Fostor Art Books, California, 1986.
6. Bernard Alkins - 147, Architectural Rendering, Walter Foster Art Books, 1986.
7. Rober W.Gill, Advanced Perspective, Thames and Hudson, London, 1974.

AD9157	ARCHITECTURAL DESIGN I	L	T	P/S	C
		0	0	14	7

AIM:

To enable the conceptualization of form, space and structure through creative thinking and to initiate architectural design process deriving from first principles.

OBJECTIVES:

- To involve students in a design project(s) that will involve simple space planning and the understanding of the functional aspects of good design.
- To involve students in a small scale building project(s) which will sensitize them to intelligent planning that is responsive to the environmental context.
- To involve students in building case study by choosing appropriate examples to enable them to formulate and concretize their concepts and architectural program.
- To engage in discussion and analytical thinking by the conduct of seminars/ workshops.
- To enable the presentation of concepts through various modes and techniques that will move constantly between 2D representation and 3D modeling.

CONTENT:

Scale and Complexity: projects involving small span, single space, single use spaces with simple movement, predominantly horizontal, as well as simple function public buildings of small scale; passive energy

Areas of focus/ concern:

- architectural form and space
- aesthetic and psychological experience of form and space in terms of scale, colour, light, texture, etc.,

- function and need: user requirements, anthropometrics, space standards, circulation
- image and symbolism

Typology/ project: bedroom, bathroom, kitchen, shop, exhibition pavilion, children's environment, snack bar, residence, petrol bunk, fire station.

TOTAL: 210 PERIODS

REQUIRED READING

1. Joseph De Chiara, Michael J Crosbie, Time Saver Standards for Building Types, McGraw Hill Professional 2001.
2. Julius Panero, Martin Zelnik, Human Dimension and Interior Space, Whitney Library of Design, 1975
3. Joseph De Chiara, Julius Panero, Martin Zelnik, Time Saver Standards for Interior Design and Space Planning, McGraw Hill 2001.
4. Ernst Neuferts Architects Data, Blackwell 2002
5. Ramsey et al, Architectural Graphic Standards, Wiley 2000

REFERENCES

1. Hideaki Hareguchi, A Comparative analysis of 20th century houses, Academy Editions, 1988
2. Robert Powell, Tropical Asian House, Select Books, 1996
3. Terence Conran, The Essential House Book, Conran Octopus, 1994
4. Sam F. Miller, Design Process: A Primer for Architectural and Interior Design, Van Nostrand Reinhold, 1995.

AD 9201 MECHANICS OF STRUCTURES II L T P/S C
2 0 0 2

AIM:

To make students aware of how structural resolutions become important in realization of architecture design concept. At this stage, students shall be exposed to forces, moments, and resolution that are to be resolved. The focus is to study the concept of shear force and bending moment in beam section, deflection of beams and theory of columns and to know the concept of indeterminate structure.

OBJECTIVES:

- To enable a student to understand the basic concepts of shear force and bending moment acting on beams subjected to various loading conditions through exercises.
- To determine the stresses in beams and strength of sections by working out problems.
- To calculate deflection of beams using methods.
- To study the theory of columns by working out problems.
- To understand the concept of inter determinate structure and its analysis.

CONTENT:

UNIT I SHEAR FORCE AND BENDING MOMENT 5

Basic concepts – shear force and bending moment diagrams for cantilever and simply supported beams subjected to various types of loadings (Point loads, uniformly distributed loads, uniformly varying loads and concentrated moments/ couple) – Over hanging simply supported beams – Point of contra flexure

UNIT II STRESSES IN BEAMS 5

Theory of simple bending – Bending stress distribution – Strength of sections – Beams of composite sections (Flitched beams) – Shearing stress distribution in beam sections

UNIT III DEFLECTION OF BEAMS 8

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

UNIT IV COLUMNS 7

Short and long columns – Concept of Elastic stability – Euler's theory – Assumptions and Load carrying capacity of Columns with different end conditions – Concept of Effective length – Slenderness ratio – Limitations of Euler's theory – Rankine's formula – Eccentric loading – Core of a column section

UNIT V STATICALLY INDETERMINATE BEAMS 5

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

TOTAL: 30 PERIODS

REQUIRED READING:

1. R.K. Bansal, A Text Book on Strength of Materials – Laxmi Publications, New Delhi, 1994.
2. B.C. Punmia, SMTS-I, Strength of Materials – Laxmi Publications, New Delhi, 1994.

REFERENCES :

1. M.M. Ratwani & V.N. Vazirani, Analysis of Structures, Vol. 1, Khanna Publishers – Delhi, 1987.
2. Timoshenko, S.P. and D.H. Young, Elements of Strength of Materials, Fifth edition, East West Press, 1993.
3. A.R. Jain and B.K.Jain, Theory and analysis of structures, Vol. 1, Nemchand and Bros, Roorkee, 1987.
4. R.K. Rajput "Strength of Materials", S.Chand & Company Ltd., New Delhi 1996.

AD9202 HISTORY OF ARCHITECTURE AND CULTURE III L T P/S C
2 0 0 2

AIM:

To inform about the development of architecture in the Western World through the evolution of Christianity as a religion and the cultural and contextual determinants that produced that architecture.

OBJECTIVES:

- To understand Church architecture as evolving within specific cultural contexts including aspects of society, religion, politics and climate
- To gain knowledge of the development of architectural form with reference to technology, style and character in the Western World through the evolution of the church from early Christian times up to the Renaissance period.

CONTENT:

UNIT I EARLY CHRISTIAN 4

Birth and spread of Christianity – transformation of the Roman Empire – early Christian worship and burial.

Church planning – basilican concept: St. Clement, Rome; St. Peters Rome, - Centralized plan concept: S, Vitale, Ravenna; S. Hagia Sophia, Constantinople; St. Marks, Venice.

UNIT II EARLY MEDIEVAL PERIOD 6

The Carolingian Renaissance – Feudalism and rural manorial life – Papacy – Monasticism – Craft and merchant guilds.

Medieval domestic architecture – Medieval monasteries- Monastery of Cluny III, Cluny - Romanesque churches – Development of vaulting – Pisa Group – Abbaye aux Hommes – Durnham cathedral.

UNIT III LATE MEDIEVAL PERIOD 6

Political and social changes: Re-emergence of the city – Crusades, - Scholasticism.

Development of Gothic architecture Church plan, structural developments in France and England – Notre Dame, Amiens; Notre Dame, Paris; Salisbury Cathedral; Westminster Abbey – wooden roofed churches – domestic architecture**.**

UNIT IV RENAISSANCE AND MANNERIST 8

Idea of rebirth and revival – Humanism – Development of thought – the Renaissance patron – Urbanism Renaissance architecture: Brunelleschi and rationally ordered space – ideal form and the centrally planned church: Alberti and Donato Bramante – Merchant Prince palaces: Palazzo Ricardi – Villas of Palladop : Villa Capra Vicenza – Mannerist architecture : The Renaissance in transition – Michaelangelo : Library at S. Lorenzo, Florence, Capitoline Hill – Inigo Jones.

UNIT V BAROQUE AND ROCOCO 6

Protestantism – Counter Reformation – French Revolution – Monarchy and growth of nations.
Roman Baroque churches: The central plan modified – St. Peters, Rome; French Baroque : Versailles – English baroque – Sir Christopher wren ; St. Paul's London – Domestic Architecture in England.
Rococo Architecture – Interiors – hotels**.**

TOTAL: 30 PERIODS

REQUIRED READINGS:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986.
2. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press, London, 1985.

REFERENCES:

1. Pier Luigi 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. Vincent Scully: Architecture; Architecture – The Natural and the Man Made: Harper Collins Pub: 1991.
4. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994

AD9203 BUILDING SERVICES I L T P/S C
3 0 0 3

AIM:

The course is designed to familiarize the students with building services that support the functioning of a building in the area of water supply and sewerage

OBJECTIVES:

- To study water quality control and treatment and its distribution within a building
- To expose the students to water management concepts
- To understand the fundamentals of waste disposal from a building and the guidelines for planning a sewerage system.
- To expose the students to waste management concepts.
- To familiarize the students with equipment for management of usable water and waste water

CONTENT:

I. WATER SUPPLY AND WATER DISTRIBUTION SYSTEM

UNIT I WATER QUALITY CONTROL AND DISTRIBUTION SYSTEM 10

Water quality, purification and treatment – surface and ground water sources, water/quality-nature of impurities, treatments - sedimentation, Rapid sand filters, pressure filters – sterilization and disinfection.

Water distribution systems

Distribution systems in small towns, layouts – cold water lines, hot water lines, Design criteria for daily water requirements based on occupancy, various kinds of meters, Tank capacity - Pumping plant capacity, Testing of water hardness - calculation of water consumption for Residential/Multistoried buildings

Piping systems/piping materials/plumbing fixtures/selection –Domestic hot water systems Solar water heating systems, application and installation

UNIT II WATER MANAGEMENT CONCEPTS 8

Different methods of Harvesting rain water from roofs and paved areas

Waste water treatment – conventional, modern systems

Mandatory provision with respect to plumbing arrangements in apartment buildings.

II. SANITARY WASTE AND SEWERAGE SYSTEM

UNIT III FUNDAMENTALS, SANITARY WASTE AND SEWERAGE SYSTEM 11

Basic Principles of sanitation and disposal of waste matter from buildings, various systems of sewerage disposal and their principles

Model bye-Laws in regard to sanitation of buildings specifications of various sanitary fittings for buildings.

Planning of bathrooms, Toilets in domestic and Multistoried buildings. Standard type of sanitary fittings, Caulking compounds, traps, joints.

Flushing cisterns, manholes, septic tanks in relation to buildings. Intercepting Chambers, inspection Chambers and their location and ventilation of sewers.

Layout of simple drainage system for small buildings, apartments, commercial buildings – gradient used in laying of drains and sewers, size of drain pipes and materials used

UNIT IV WASTE MANAGEMENT CONCEPT 8

Sewerage disposal :

Primary, secondary treatment, activated sludge, intermittent and trickling sand filters, sewage treatment plant – layout for residential/commercial buildings

Solid waste disposal :

Refuse disposal, collection, and conveyance disposal of town refuse. Sanitary land fills, incineration, vermiculture, aerobic digestion for compost, anaerobic digestion for energy and organic filler (Bio gas) and rural energy systems

UNIT V EQUIPMENT'S USED FOR MANAGEMENT OF USABLE WATER AND WASTE WATER 8

Space requirements, Configuration and Sizing of motors and deep well, centrifugal, +submersible, reciprocating pumps and their location in building types

TOTAL:45 PERIODS

REQUIRED READINGS:

1. Manual of water supply and treatment, Second edition, CPHEEO, Ministry of works and housing, New Delhi 1977
2. AFE Wise, JA Swaffied Water, Sanitary & Waste Services in buildings – Mitchell Publishing Co. Ltd. – 2002, V Edition

REFERENCES:

1. G.M. Fair, J.C. Geyer and D.Okin, Water and Waste water engineering Volume II, John Wiley & Sons, Inc. New York, 1968
2. Manual on sewerage and sewerage treatment, CPHEEO – Ministry of works and housing, New Delhi, 1980
3. S.C.Rangwala, Water supply and sanitary engineering, Chartar publishing house, Anand 3888601, 1989, Lecture notes compiled by Chaman.L.Gupta
4. Renewable energy, basics and technology, supplement volume on integrated energy systems) Solar Agni systems, Sri Aurobindo Ashram, Pondicherry 605002 India

AD9204 CLIMATE AND BUILT ENVIRONMENT L T P/S C
3 0 0 3

AIM:

To enable the understanding of the technical basis of the environment which exists in or around a building and to integrate the requirements of climate in building and in relation to building functions.

OBJECTIVES:

- To study human heat balance and comfort.
- To familiarize students with the design and settings for buildings for daylight and factors that influence temperature
- To inform about the air pattern around buildings and the effect of wind on design and siting of buildings
- To expose the students to the various design strategies for building in different types of climatic zones.

CONTENT:

UNIT I CLIMATE AND HUMAN COMFORT 10

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

UNIT II DESIGN OF SOLAR SHADING DEVICES 8

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

UNIT III HEAT FLOW THROUGH BUILDING ENVELOPE CONCEPTS 9

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

UNIT IV IMPACT OF AIR MOVEMENT DUE TO NATURAL AND BUILT FORMS 9

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

UNIT V CLIMATE AND DESIGN OF BUILDINGS 9

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

TOTAL: 45 PERIODS

REQUIRED READINGS:

1. O.H. Koenigsberger and others (1993), Manual of Tropical Housing and Building – Part I - Climate design, Orient Longman, Madras, India.
2. Bureau of Indian Standards IS 3792 (1987), Hand book on Functional requirements of buildings other than industrial buildings, (Part I – IV), Manakbhavan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002

REFERENCES:

1. Martin Evans (1980), Housing Climate and Comfort – Architectural Press, London
2. B. Givoni (1981), Man, Climate and Architecture, Architectural Sciences Series - Applied Science Publishers Ltd., London
3. B. Givoni (1994) Passive and Low Energy Cooling of building,Van Nortrand Reinhold New York, USA..
4. Galloe, Salam and Sayigh A.M.M. (1998) “Architecture, Comfort and Energy”, Elsivier Science Ltd. , Oxford, U.K.

AD9205 BUILDING CONSTRUCTION II L T P/S C

1 0 4 3

AIM:

This course is devised to provide an understanding of brick and clay products and timber and industrial timber products that go into making of structural and non structural components of building.

OBJECTIVES

- To understand both in general and in detail the methods of construction by using basic materials such as brick; clay products and natural timber for both structural and non-structural components.
- To understand both in general and in detail the methods of construction by using man-made timber products such as ply wood.

CONTENT:

UNIT I BRICKS 10

Design and construction of various structural components using bricks – basics of brick bonding principles, types of bonding, foundations, load bearing walls, cavity walls, lintels, arches, corbels, piers, flooring etc.

Exercises of the above and application of the design details of brick construction in single or (Ground+1) buildings – small house, community hall, snack bar etc. and understanding the same through case studies.

Methods of construction of various non-structural building components such as partition walls, screens, compound walls, parapets, coping.

Exercises of the above through case studies and drawings.

UNIT II CLAY PRODUCTS 5

Clay block partition walls, screen walls, clay blocks for flooring and roofing. Roofing methods using Mangalore tiles, pot tiles, pan tiles.

Exercises involving the above through drawing and case studies.

UNIT III TIMBER JOINERY, PARTITIONS, PANELLING, FALSE CEILING 15

Methods of construction using natural timber in joinery works including methods of fixing and options for finishing.

Window types: panelled, pivoted, top hung, louvered, glazed, windows, French windows, corner windows, bay windows.

Door types: ledge-braced, panelled, glazed, sliding, sliding/folding, louvered

Ventilators: top hung, bottom hung, pivoted, louvered, glazed.

Hardware: For doors, windows and ventilators

Exercises involving the above through drawings and application of the above for a single or (G+1) building with schedule of joinery.

Timber Partitions, panelling, false ceiling. Methods of construction using man-made timber products such as ply woods, block boards, and laminated wood and gypsum products. in fixed partitions, sliding/folding partitions, wall panelling, false ceiling.

Exercises of the above through drawings and case studies.

UNIT IV TIMBER STAIRCASES 15

Types of timber staircases. Methods of construction of timber staircases- basic principles and design details including detailing of handrail and baluster-

Exercises involving the above through drawings.

UNIT V TIMBER WALLS, FLOORS AND TRUSSES 15

Methods of construction using natural timber in various structural components of the building such as walls, floors, roof trusses (lean to couple roofs, collar roof, king post, queen post and other trusses)

Exercises involving the above through drawings.

Quality assurance measures and testing procedures related to material, workmanship and performance for the above topics.

TOTAL: 75 PERIODS

REQUIRED READING

1. Don A. Watson, “Construction Materials and Processes”, McGraw Hill, 1972.
2. W.B. McKay, “Building Construction” Vol, 1 and 2, Longmans, UK, 1981.
3. S.C Rangwala “Building Construction” Charotar Publishing House, India, 2000
4. S.K.Sharma, “A Text book of Building Construction”, S.Chand & Co Ltd., New Delhi, 1998

REFERENCES

1. American Institute of Timber Construction (AITC), Timber Construction Manual, Wiley Publishers, 2004
2. Francis D.K Ching Building Construction illustrated, John Willey & Sons, 2000
3. Wills H Wagner, Howard Bud, Modern Carpentry, Good Heart – Wilcox publishers, Portland, 2003
4. Barry, Construction of Buildings, Volume 1&2, Blackwell Publishing Ltd., Oxford, 2005

AD9206 COMPUTER AIDED DRAFTING L T P/S C
1 0 4 3

AIM:

The lecture program and practical engage students with understanding of the Software, Visual languages, Design fundamentals and Visual literacy which provide the fundamental understandings required for the Medium.

OBJECTIVES:

- To introduce Computer operation principles and explore image editing through a visual composition using graphics.
- To impart training in Computer aided 2D drafting and 3D Modeling through projects
- To enable the rendering of a building so as to create a photo realistic image.

CONTENT:

UNIT I INTRODUCTION TO COMPUTER AND IMAGE EDITING 10

Project: Visual Composition using Graphics (Pixels /Vector)

Tools: Technology of small computer system, computer terminology operation principles of P.C., introduction to application software, and graphic system, and use of printers, scanner, plotter, File management, etc. Understanding Bitmap images and Vector Graphics, Image size and Resolution. Basic Tools for Editing and Creating Graphics in ADOBE PHOTOSHOP.

UNIT II INTRODUCTION TO VISUAL COMPOSITION USING COMPUTER TOOLS 15

Project: Visual Composition using various elements of Design (lines, shapes, colour, texture etc.)

Tools: Understanding the drawing unit’s settings, scales, limits, drawing tools, drawing objects, object editing, and text, dimensioning in ACAD. Transparent overlays, hatching utilities, line type, line weight and colour. Multiline, Polyline, etc. Styles, blocks and symbol library in ACAD.

UNIT III INTRODUCTION TO COMPUTER AIDED 2D DRAFTING 15

Project: 2D Drafting of a simple building

Tools: Understanding the drawing unit’s settings, scales, limits, drawing tools, drawing objects, object editing, and text, dimensioning in ACAD. Transparent overlays, hatching utilities, line type, line weight and colour. Multiline, Polyline, etc. Styles, blocks and symbol library in ACAD.

UNIT IV INTRODUCTION TO 3D MODELLING 15

Project: Create 3D sculpture using 3D primitives (cubes, spheres etc.)

Tools: Slide facilities script attributes, V-port, editing session. Introduction to 3D-modelling technique and construction planes, drawing objects, 3D surfaces setting up elevation thickness and use of dynamic projections in ACAD/ 3DMAX. Solid modeling with primitive command and Boolean operation.

UNIT V 3D RENDERING AND SETTING 20

Project: Visualize a building. Explore the potential of lights and camera in 3DMAX and use the same in the model created for the final submission.

Tools: Rendering and scene setting to create a photo realistic picture, understanding material mapping, environment setting and image filling in ACAD/ 3DMAX. Exercise to identify and visualize a building using the above said utilities.

TOTAL: 75 PERIODS

REQUIRED READING:

1. Photoshop 7 Bible Professional Edition, Wiley John & Son INC, New York, DekeMcClelland, 2000.
2. AutoCAD architectural user guide – Autodesk Inc., 1998.
3. A. Watt, Fundamentals of Three-Dimensional Computer Graphics, Addis Wesley, Massachusetts, 1989.

REFERENCES:

1. The Illustrated AutoCAD 2002 Quick Reference, Ralph Grabowski,
2. Autocad 2000: A Problem-Solving Approach, Sham tikoo. Pub: Thomson Learning,1999

AD 9207	ARCHITECTURAL DESIGN II	L	T	P/S	C
		0	0	14	7

AIM:

To create an understanding of the inter relationships amongst various elements of architecture – form, function, space planning, user perception and behaviour.

OBJECTIVES:

- To understand the characteristics of site and the importance of site planning which includes built form and open space.
- To understand the relationship between form and spaces and the importance of aesthetics.
- To ascertain the response of user group through case studies.
- To enable the presentation of concepts through 2D drawings, sketches and model.

CONTENT:

Scale and Complexity : Project involving organization of multiples of single unit space with predominantly horizontal movement as well as single use public buildings of small scale; passive energy

Areas of concern/ focus:

- form-space relationships
- spatial organization
- behavioral aspects especially those relating to children
- site planning aspects
- appropriate materials and construction

Suggestive Typologies/ projects : residential buildings, institutional buildings: nursery or primary schools, schools for children with specific disabilities, primary health center, banks, neighborhood market, library

TOTAL: 210 PERIODS

REQUIRED READING

1. Joseph De Chiara, Michael J Crosbie, Time Saver Standards for Building Types, McGraw Hill Professional 2001.
2. Julius Panero, Martin Zelnik, Human Dimension and Interior Space, Whitney Library of Design, 1975
3. Joseph De Chiara, Julius Panero, Martin Zelnik, Time Saver Standards for Interior Design and Space Planning, McGraw Hill 2001.
4. Ernst Neuferts Architects Data, Blackwell 2002
5. Ramsey et al, Architectural Graphic Standards, Wiley 2000

REFERENCES

1. Richard P. Dober, Campus Planning
2. Kanvinde, Campus Planning in India
3. Kevin Lynch, Site planning, MIT Press, Cambridge, 1967
4. Sam F. Miller, Design Process: A Primer for Architectural and Interior Design, Van Nostrand Reinhold, 1995

AD9251 DESIGN OF STRUCTURES I L T P/S C
3 0 0 3

AIM:

To enable the design of timber and steel structural members in a building.

OBJECTIVES:

- To introduce the design of various timber components in a building.
- To enable the understanding of the types, efficiency and strength, advantages and disadvantages of Rivet and welded joints in steel.
- To enable the design of Tension (beams) and compression (columns) steel members in a building under various conditions.

CONTENT:

TIMBER STRUCTURES

UNIT I DESIGN OF BEAMS AND COLUMNS 7

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

STEEL STRUCTURES

UNIT II RIVETED AND WELDED JOINTS 12

Assumptions – failure of Riveted joints – Strength and Efficiency of Riveted Joints – Types – Design of Riveted Joints for Axially Loaded Members (Excluding eccentric connections)
Types of welded joints – Advantages and disadvantages – Design of Fillet welds
(Excluding eccentric connections).

UNIT III TENSION MEMBERS 8

Introduction – Net sectional area – permissible stresses. Design of Axially loaded Tension member – Lug angle – code provision – tension splice.

UNIT IV COMPRESSION MEMBERS 10

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

UNIT V STEEL BEAMS 8

Introduction – laterally supported and unsupported beams – Design of laterally supported beams.

TOTAL: 45 PERIODS

REQUIRED READING

1. L.S. Negi, Design of Streel Structures – Tata McGraw Hill Publishing Company Ltd., New Delhi, 1997.
2. S. Ramachandra, Design of Steel Structures - Standard Book House, Delhi, 1984.

REFERENCES

1. A.S.Arya, Structural Design in Steel, Masonry and Timber, Nemchand and Bros, Roorkee, 1971.
2. National Building Code of India, 1983, Part VI, Structural Design.
3. Gurucharan Singh, Design of Steel Structures, Standard Publishers, New Delhi, 1982.
4. Dayaratnam.P, Design of Steel Structures, Oxford and IBH Publishing Co.
5. IS 883 – Code of Practice for Design of Structural Timber in Buildings
6. IS 800 – Code of Practice for use of Structural Steel in General Building Construction

AD9252 HISTORY OF ARCHITECTURE AND CULTURE IV L T P/S C
2 0 0 2

AIM:

To inform about the development of architecture in Asia particularly India through the evolution of Islam as a religion and the cultural and contextual determinants that produced that architecture.

OBJECTIVES:

- To understand Islamic architecture as evolving within specific cultural contexts including aspects of society, religion, politics and climate
- To gain knowledge of the development of architectural form with reference to technology, style and character in the Indian context through the evolution of the mosque and tomb in the various phases of Islamic rule in the country.
- To gain knowledge of the expertise of the Mughal rulers in city building and garden design.

CONTENT:

UNIT I INTRODUCTION TO ISLAMIC ARCHITECTURE 5

History of Islam: birth, spread and principles - Islamic architecture as rising from Islam as a socio-cultural and political phenomenon- evolution of building types in terms of forms and functions: mosque, tomb, minaret, madarasa, palace, caravanserai, market - character of Islamic architecture: principles, structure, materials and methods of construction, elements of

decoration, colour, geometry, light

UNIT II ISLAMIC ARCHITECTURE IN INDIA & ARCHITECTURE OF THE DELHI SULTANATE 7

Advent of Islam into the Indian subcontinent and its impact including the change in the architectural scene- overview of development based on political history and the corresponding classification of architecture - Islamic architecture in India: sources and influences

Establishment of the Delhi Sultanate- evolution of architecture under the Slave, Khalji, Tughlaq, Sayyid and Lodhi Dynasties – tombs in Punjab- important examples for each period

UNIT III ISLAMIC ARCHITECTURE IN THE PROVINCES 7

Shift of power to the provinces and evolution of regional architecture with their own unique influences: geographic, cultural, political, etc., - Bengal, Gujarat, Jaunpur, Malwa, Kashmir, Deccan (Gulbarga, Bidar, Golconda and Bijapur) - important examples for each region

UNIT IV MUGHAL ARCHITECTURE 6

Mughals in India- political and cultural history- synthesis of Hindu-Muslim culture, Sufi movement - evolution of architecture and ouline of Mughal cities and gardens under the Mughal rulers: Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb- important examples- decline of the Mughal empire.

UNIT V CROSS-CULTURAL INFLUENCES 5

Cross cultural influences across India and secular architecture of the princely states: Oudh, Rajput, Sikh, Vijayanagara, Mysore, Madurai- important examples

TOTAL: 30 PERIODS

REQUIRED READINGS:

1. George Mitchell, Architecture of the Islamic World - its history and social meaning, Thames and Hudson, London 1978.
2. Robert Hillenbrand, Islamic Architecture- Form, Function and Meaning, Edinburgh University Press 1994.
3. Brown Percy, Indian Architecture (Islamic Period), Taraporevala and Sons, Bombay 1983.
4. Satish Grover, Islamic Architecture in India, CBS Pub, New Delhi 2002

REFERENCES:

1. Christopher Tadgell, The History of Architecture in India, Penguin Books (India) Ltd, New Delhi 1990.
2. R.Nath - History of Mughal Architecture Vols I to III - Abhinav Publications - New Delhi, 1985.
3. Catherine Asher, Architecture of Mughal India, Cambridge University Press 2001
4. Architecture in Medieval India: Forms, Contexts, Histories, edited by Monica Juneja. New Delhi, Permanent Black 2001

AD9253 BUILDING MATERIALS III L T P/S C
2 0 0 2

AIM:

This course is devised to make students understand the materials of construction such as cement, concrete, paints and other surface finishes and their applications in the building industry.

OBJECTIVES:

- To have an understanding of the properties, characteristics, strength, manufacture, processing and application of materials such as cement, glass, paints and other finishing materials.
- To inform about the properties, characteristics and use of concrete in construction including its manufacture
- To inform about the properties, characteristics and manufacture of various type of concrete using aggregates.

UNIT I REQUIREMENTS OF INGREDIENTS FOR MORTAR/ CONCRETE 4

Cement: definition, composition, strength, properties, manufacture, test for cement, types of cement

Sand: sources, impurities, classification, tests for bulking of sand, quality of sand

Coarse aggregate: Sources, shape, size, grading, sampling and analysis, impurities

Water: sources, requirements, water quality, tests

UNITII CEMENT CONCRETE AND ITS MANUFACTURE 4

Definition, properties, specification, proportioning, water-cement ratio, workability, curing, water-proofing, guniting, special concretes.

Manufacture, construction of formwork, placing, quality assurance testing, fabrication, incorporation of steel in concrete.

UNIT III TYPES OF CONCRETE AGGREGATES AND CONCRETE 6

Lightweight aggregates, aerated concrete, no-fines concrete, polymer concrete, RCC, pre-stressed concrete, fibre-reinforced concrete, ready-mixed concrete

UNIT IV SURFACE FINISHING, FLOORING AND DAMP-PROOFING 8

Surface finishing: Smooth finishes, textured finishes, ribbed, etched, exposed aggregate finish- weathering of finishes- external renderings- roughcast, dry dash, textured, stucco, gypsum and POP applications, protective and decorative coatings.

Paints- properties and defects in paints, enamels, distemper, plastic emulsion, special paints- fire retardant, luminous and bituminous paints.

Materials for damp-proofing and water-proofing concrete structures: Hot and cold applications, emulsified asphalt, vinyl, epoxy resins, chemical admixtures, bentonite clay etc.- properties, uses and cost of materials.

Types of flooring- laying methods for marble, mosaic, and terrazzo, plain cement flooring, flooring stones & tiles.

UNITV GLASS 8

Composition of glass, brief study on manufacture, treatment, properties and uses of glass. Types of glass- float glass, cast glass, glass blocks, foamed glass. Decorative glass, solar control, toughened glass, wired glass, laminated glass, fire-resistant glass, glass blocks, structural glass - properties and application in building industry, glazing and energy conservation measures.

TOTAL: 30 PERIODS

REQUIRED READING

1. M.S.Shetty, Concrete Technology, S.Chand & Co.ltd,New Delhi,1986.
2. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, 1997.
3. S.K Duggal, Building Materials, Oxford and IBM Publishing Co, Pvt Ltd.,

REFERENCES

1. Arthur Lyons - Materials for Architects and Builders - An introduction Arnold, London, 1997.
2. Don A.Watson, Construction Materials and Process, McGraw Hill Co., 1972.
3. S.N Sinha, Reinforced Concrete Design, Tata-McGraw Hill, New Delhi, 2002
4. Howard Kent Preston, Prestressed concrete for Architects and Engineers, McGraw Hill, New York, 1964.

AD9254 BUILDING SERVICES II L T P/S C
3 0 0 3

AIM:

To familiarize the students with building services that support the functioning of a building in the area of electrical wiring, lighting and conveying systems

OBJECTIVES:

- To inform the students of the laws and basics of electricity and wiring systems within domestic and commercial buildings
- To expose the students to the fundamentals of lighting and lighting design
- To familiarize the students to the basic design principle systems of vertical distributions systems within a building
- To expose the student with the NBC Code for all of the above building services

CONTENT:

UNIT I ELECTRICAL AND ELECTRONIC SYSTEMS: ELECTRICAL WIRING SYSTEMS 10

Laws of electrical circuits: Ohms and Kichoffs Laws

Basics of electricity – Single/Three phase supply. Earthing for safety – types of earthing - ISI specifications

Electrical wiring systems in domestic and commercial buildings. Conduits, Types of wiring Diagram for connection.

Bus way, Bus Bars, lighting track and conduits (Aluminum metallic, non metallic) arrangements. Power handling, equipment, switch board, panel boards.

Lighting conductors : Purpose, materials, fixing, earthing arrangements

Electronic and Communication systems

Communication and data systems- communication spaces, pathways, cabling systems, voice and data, communication, Electronic security systems, computer labs/server, Rooms etc.

Electrical Installations in Buildings. Main and distribution boards – transformers – switch gears – substations – space requirement and Layout of the same in building types

UNIT II FUNDAMENTALS OF LIGHTING 10

Principles of light – Electromagnetic radiation, waves, nature of vision, measurement of lighting.

Principles of illumination: definitions, Visual tasks, Factors affecting visual tasks Units of light, definitions of flux, solid angle, luminous intensity –utilization factor – depreciation factor- MSCP – MHCP, brightness, glare.

UNIT III ILLUMINATION AND LIGHTING 7

Electric light sources: brief description, characteristics and application of different types of lamps, methods of mounting and lighting control

Luminaries classification/ - Lumen method for design – Room reflectance/ Glare – manufacturer's data on luminaries / luminaries cost

UNIT IV LIGHTING DESIGN: INSTALLATION AND APPLICATION IN BUILDINGS 8

Artificial light sources, spectral energy distribution, Luminous efficiency- color temperature – color rendering, Additive, subtractive color and their application areas and out door lighting

Lighting for Office, Schools, Libraries, Residential, Hospital, Parking, Outdoor.

Elementary ideas of special features required and minimum level of illumination for the physically handicapped and elderly in building types

Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Reducing electric loads, installation and maintenance.

UNIT V LIGHTING DESIGN: CONVEYING SYSTEMS 10

Basic design Principles, criteria for planning sizing, selection and layout of vertical distribution systems – (lifts, Escalators and moving walkways) along with mechanical, dimensional details

Elevators- types of elevators - design criteria, capacity, frequency, car size, speed, number and size of elevators, layout of banks of elevators, planning and locating service cores in buildings, types of elevators – pit, machine room details – NBC code

Escalators and Conveyors parallel and criss cross escalators, horizontal belt conveyors, horizontal moving walkways – design criteria, speed size, capacity, number

Detailing for comfort, convenience of users- special features for physically handicapped and elderly

TOTAL: 45 PERIODS

REQUIRED READINGS:

1. E.P.Ambrose, Electric Heating, John Weley & Sons Inc., New York, 1968
2. Philips Lighting in Architectural Design, McGraw Hill. New York, 1964
3. R.G.Hopkenson & J.D.Kay, The lighting of Buildings, Faber & Faber, London, 1969

Conveying systems

1. Elevators, Escalators , Moving Walkways – Manufactures catalogues
2. National Building Code.

REFERENCES

Electrical Systems:

1. Handbook of building Engineers in metric systems, New Delhi 1968
2. National Building Code

AD9255 SITE SURVEYING AND PLANNING L T P/S C
3 0 0 3

AIM:

To enable the appreciation of site and its elements and to equip students with the various types of techniques of site surveying as well as to introduce them to aspects of site planning and site analysis

OBJECTIVES:

- To teach various techniques of site surveying
- To teach the importance of site and its content in architectural creations
- To orient the students towards several influencing factors which governs the siting of a building or group of buildings in a given site.
- To teach the students the methodology of preparing a site analysis diagram. This will serve as a prelude to any architectural creation.

CONTENT:

UNIT I INTRODUCTION 6

Definition of plot, site, land and region, units of measurements, reconnaissance and need for surveying.

UNIT II SITE SURVEYING 10

Chain survey and Triangulation – Instruments used, method of survey and plotting into survey drawing, plain table, Compass and Theodolite Surveys, method, instruments used and application.

Computation of area by geometrical figures and other methods. Marking plans, layout plans and centerline plans – Importance, procedure for making these drawings and dimensioning. Setting out the plan on site – Procedure and Precautions.

UNIT III SITE ANALYSIS 10

Importance of site analysis; On site and off site factors; Analysis of natural, cultural and aesthetic factors – topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available - sources of water supply and means of disposal system, visual aspects; Preparation of site analysis diagram.

Site selection criteria for housing development, commercial and institutional projects.

UNIT IV DETAILED ANALYSIS AND TECHNIQUES 9

Context of the site. Introduction to existing master plans landuse for cities, development control Rules. Preparation of maps of matrix analysis & composite analysis.

Study of contours, slope analysis, grading process, grading criteria, functional and aesthetic considerations.

UNIT V SITE PLANNING AND SITE LAYOUT PRINCIPLES 10

Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, road widths and parking, regulations. Turning radii & street intersections

Study of microclimate; vegetation, landforms and water as modifiers of microclimate.

TOTAL: 45 PERIODS

REQUIRED READING:

1. Kevin Lynch - Site planning - MIT Press, Cambridge, MA - 1967.
2. B.C.Punmia - Surveying Vol.I - Standard Book House, New Delhi - 1983.

REFERENCES:

1. Edward. T. Q. Site Analysis – Architectural Media, 1983.
2. P.B.Shahani - Text of surveying Vol.I, Oxford and IBH Publishing Co – 1980

3. Joseph De.Chiarra and Lee Coppleman - Planning Design Criteria - Van Nostrand Reinhold Co.,
4. Storm Steven, Site engineering for landscape Architects, John wiley & Sons Ine, 2004.
5. Development Control Rules – CMDA.

AD9256 BUILDING CONSTRUCTION III L T P/S C
1 0 4 3

AIM:

To provide an understanding of construction using concrete as well as to expose students to the current research in concrete construction and detailing.

OBJECTIVES:

- To introduce construction of building components in Reinforced Cement Concrete.
- To introduce various water proofing, insulation & protection systems and their methods of construction.
- To expose the students to the advanced construction systems developed by research institutes in the country and the detailing of the same.

CONTENT:

UNITI CONCRETE CONSTRUCTION 25

Construction of simple framed buildings using RCC-

Types of foundations (strip foundation, raft, isolated, combined, and continuous) construction details.

Construction details of RCC frames- beams, columns, slabs, precast frames.

Construction details of apertures- concrete lintels, sunshades, arches, shading devices, screen walls, pergolas.

Construction principles and details for RCC slabs- one way slabs, 2-way slab, continuous, flat slab, waffle slab, coffer slab etc.

Construction details of concrete blocks-for walls, lintels, floors and roofs.

Exercises of the above through drawings and case studies.

UNIT II WATER-PROOFING AND DAMP-PROOFING OF CONCRETE STRUCTURES 10

Construction methods for water-proofing, damp-proofing for concrete walls, roofs

Construction methods for water-proofing and damp proofing basements, retaining walls, swimming pools etc.

Exercises of the above through case studies and drawings.

UNIT III DESIGN AND CONSTRUCTION METHODS FOR CONCRETE STAIRCASES 15

Staircases- basic principles, types of staircase- straight flight, dog-legged, quarter-turn, spiral, helical and other types. Support conditions for stairs and details of handrail, baluster etc. and finishes for stairs.

Exercises of the above through case studies and drawings

UNIT IV ADVANCED CONSTRUCTION SYSTEMS DEVELOPED BY RESEARCH ORGANISATIONS IN INDIA 10

Design and detailing of building materials and components developed by research organisations like CBRI, SERC, NBO, BMTPC.

Special construction details for materials like brick, concrete, other materials developed by Building research organisation.

Exercises of the above through case studies and drawings.

UNIT V GLASS 15

Construction methods using glass for single storey all glass structures like pavilions, green houses, staircases. Construction methods using glass for single/multi-storey buildings including curtain walling details.

Exercises of the above through case studies and drawings.

Quality assurance measures and testing procedures related to material, workmanship and performance for the above topics.

TOTAL: 75 PERIODS

REQUIRED READING

1. M.S.Shetty, Concrete Technology, S.Chand & Co.ltd,New Delhi,1986.
2. Dr. B.C.Punmia, A Text book of Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 2001.
3. 3.T.D Ahuja and G.S. Birdie, Fundamentals of Building Construction, Dhanpat Rai Publishing Company Pvt. Ltd., New Delhi, 1996
4. S.P Arora and S.P Bindra, A Text Book of Building Construction - Dhanpat Rai Publishing Company Pvt. Ltd., New Delhi, 1990

REFERENCES

1. Alan Blanc, Stairs, Steps and Ramps, Butterworth, Heinemann Ltd., 1999
2. Francis D.K Ching Building Construction illustrated, John Willey & Sons, 2000
3. W.B. McKay, “Building Construction” Vol, 1 and 2, Longmans, UK, 1981.
4. Barry, Construction of Buildings, Volume 1&2, Blackwell Publishing Ltd., Oxford, 2005
5. Pamphlet and Manuals supplied or published by SERC, BMPTC, HUDCO and Other research organization
6. Standard and Specification for cost effective innovation, Building Materials and Sequence, BMPTC Publication, New Delhi
7. R. Chudley**,** Construction Technology, Richard Clay, Chanur Press, 1980

AD9257 ARCHITECTURAL DESIGN III L T P/S C
0 0 14 7

AIM:

To create a holistic understanding of the socio-cultural, geographic and economic aspects that shape the built environment as well as to expose the students towards the design of simple community oriented buildings.

OBJECTIVES:

- To make a comprehensive study of a rural settlement that is an exemplar of collective design evolved organically over a period of time.
- To expose the students on the methodology of conducting various surveys covering, physical, visual characteristics and demographic aspects.
- To understand the vernacular / traditional architecture involving local materials and construction techniques.
- To emphasise on the importance of designing built form and open spaces that meet the aspirations of the community.

- To enable the presentation of concepts through 2D and 3D presentation including sketches and model.

CONTENT:

Scale and Complexity: Projects involving public and community oriented buildings -multi room, single use, small span, multiple storied, horizontal and vertical movement; active cum passive energy; comprehensive analysis of rural settlement in a hierarchical manner.

Area of concern/ focus :

- rural settlements and architecture
- community oriented design
- simple public buildings (not more than Ground+ 2 floors)

Suggestive Typologies/ projects : Rural projects that involve studies and design at settlement and building level- noon meal centre, market, primary health centre; department store, higher secondary school, campus students centre

TOTAL: 210 PERIODS

REQUIRED READING

1. Joseph De Chiara, Michael J Crosbie, Time Saver Standards for Building Types, McGraw Hill Professional 2001.
2. Julius Panero, Martin Zelnik, Human Dimension and Interior Space, Whitney Library of Design, 1975
3. Joseph De Chiara, Julius Panero, Martin Zelnik, Time Saver Standards for Interior Design and Space Planning, McGraw Hill 2001.
4. Ernst Neuferts Architects Data, Blackwell 2002
5. Ramsey et al, Architectural Graphic Standards, Wiley 2000

REFERENCES

1. Richard P. Dober, Campus Planning
2. Kanvinde, Campus Planning in India
3. Kevin Lynch, Site planning, MIT Press, Cambridge, 1967
4. Sam F. Miller, Design Process: A Primer for Architectural and Interior Design, Van Nostrand Reinhold, 1995

AD9301 DESIGN OF STRUCTURES II

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AIM:

To facilitate the design of Reinforced concrete beams and slabs by working stress method and limit state method.

OBJECTIVES:

- To inform about the methods of design through working stress and limit state methods.
- To use the above two methods for the design of Concrete beams and slabs under various conditions.
- To use the limit state method for design of a concrete staircase.

UNIT I METHODS OF DESIGN FOR CONCRETE MEMBERS 12

Concept of Elastic method, Ultimate Load Method and Limit State Method – Advantages of Limit State Method over other methods.

WORKING STRESS DESIGN OF BEAMS

Analysis and Design of Singly and Doubly reinforced rectangular and flanged beams for bending – Design of Beams for shear

UNIT II LIMIT STATE DESIGN OF BEAMS 12

Analysis and design of singly and doubly reinforced rectangular and flanged beams for Bending - Design of beams for shear – Design of Continuous beams using IS code co-efficient.

UNIT III LIMIT STATE DESIGN OF SLABS 7

Behaviour of one way and two way slabs – Design of one way and two way slabs for various edge conditions - Corner effects.

UNIT IV DESIGN OF CIRCULAR SLABS 7

Design of Simply supported and fixed Circular slabs subjected to uniformly distributed loads.

UNIT V DESIGN OF STAIRCASE BY LIMIT STATE METHOD 7

Types of Staircases – Design of Dog Legged Staircase.

TOTAL: 45 PERIODS

REQUIRED READING

1. S.N. Sinha, Reinforced Concrete Design – Tata McGraw Hill Publishing Co. Ltd.,New Delhi, 1998.
2. Shah, Reinforced Concrete, Vol. 1 and 2 – Charotar Publishing House, Anand, 1998.

REFERENCES:

1. P.Dayaratnam, Design of Reinforced Concrete Structures, Oxford and IBH Publishing Co., 1983.
2. C. Sinha and S.K. Roy, Fundamentals of Reinforced Concrete, S.Chand & Co., New Delhi, 1983.
3. Dr. B.C. Punmia, Reinforced Concrete Structures, Vol, 1 & 2 Laxmi publication, Delhi, 1994.
4. IS 456:2000, Indian Standard, Plain and Reinforced Concrete – Code of Practice, Bureau of Indian Standards.
5. S. Unnikrishnan Pillai and Devados Menon, Reinforced Concrete Design – Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1999.

AD9302 HISTORY OF ARCHITECTURE AND CULTURE V

L	T	P/S	C
3	0	0	3

AIM:

To expose the students to the origin, development and spread of modern architecture in the Western world as well the architectural production of colonialism in India.

OBJECTIVES:

- To introduce the condition of modernity and bring out its impact in the realm of architecture
- To study modern architecture as evolving from specific aspects of modernity-industrialisation, urbanisation, material development, modern art as well as society's reaction to them.
- To study the further trajectories of modern architecture in the post WWII period.
- To create an overall understanding of the architectural developments in India influenced by colonial rule.

CONTENT:

UNIT I LEADING TO A NEW ARCHITECTURE 8

Beginnings of modernity –Origin and development of Neo Classicism- Structural Neo classicists: Laugier, Soufflot, Schinkel, Labrouste - Romantic Neo classicists:Ledoux , Boulle, Durand, Jefferson- Industrialization and its impact- Urbanization in Europe and America- split of design education into architecture and engineering streams- Emergent new building / space types- Growing need for mass housing- Development of Industrial material and construction technologies- concrete, glass and steel- structural engineering, standardization-Industrial exhibitions- Chicago School and skyscraper development.

UNIT II REVIEWING INDUSTRIALISATION 8

Opposition to industrial arts and production - Arts and Crafts in Europe and America : Morris, Webb- Art Nouveau: Horta, Van De Velde, Gaudi, Guimard, Mackintosh - Vienna secession: Hoffman, Olbrich- Wright's early works

UNIT III MODERN ARCHITECTURE: DEVELOPMENT AND INSTITUTIONALISATION 13

Adolf Loos and critique of ornamentation- Raumplan: Peter Behrens- Werkbund – Modern architecture and art - Expressionism: Mendelsohn, Taut, Polzeig- Futurism- Constructivism, Cubism-Suprematism- De–Stijl

Bauhaus- Gropius, Meyer and Mies -CIAM I to X and its role in canonizing architecture- growth of International Style

Ideas and works of Gropius, Le Corbusier, Aalto, Mies, later works of Wright

UNIT IV MODERN ARCHITECTURE : LATER DIRECTIONS 8

Post WW II developments and spread of international style – Later works of Corbusier: Brasilia, Unite- Works of later modernists: Louis Kahn, Paul Rudolph, Eero Saarinen

UNIT V COLONIAL ARCHITECTURE IN INDIA 8

Colonialism and its impact- early colonial architecture :forts, bungalows, cantonments – Stylistic transformations: Neo- classicism, Gothic Revival and Indo Saracenic - PWD and institutionalization of architecture - Building of New Delhi showcasing imperial power.

TOTAL: 45 PERIODS

REQUIRED READING:

1. Kenneth Frampton , Modern Architecture: A Critical History , Thames & Hudson, London, 1994
2. Manfredo Tafuri., Modern Architecture, Harry N. Abrams Inc.
3. Leonardo Benevolo, History of Modern Architecture, 2 Vols.,Routledge & Keganpaul, London, 1971
4. Miki Desai et. al., Architecture and independence, Oxford University Press,2000

REFERENCES:

1. Thomas Metcalf, An imperial Vision, Faber & Faber/ Electa, 1980.
2. Christian Norburg Schulz., Meaning in Western Architecture, Studio Vista
3. William J. Curtis – Modern Architecture since 1900.

AD9303 BUILDING MATERIALS IV L T P/S C
2 0 0 2

AIM:

This course is devised to make students understand ferrous and non ferrous materials of construction as well as plastics and their applications in building industry.

OBJECTIVES:

- To have an understanding of the properties, characteristics, strength, manufacture, processing and application of materials such steel and steel alloys, aluminum and aluminum alloys.
- To inform the innovations in the steel industry and the standards and accepted industrial practices involved.
- To inform the properties, characteristics and application of plastics in the construction industry as well as other light weight roofing materials.

UNIT I FERROUS METALS: STEEL AND STEEL ALLOYS 6

Iron ore: definition, introduction, manufacture of iron ore, types- pig iron, wrought iron and cast iron- their properties and uses.

Steel- definition, properties, Manufacture, casting, heat treatment, mechanical treatment process of steel, market forms of steel, fire protection of steel. Steel alloys- properties and uses.

Structural steel-definition and protection. Steel sheeting- types of sheeting.

Corrosion of ferrous metals: Causes, factors of corrosion and prevention

UNIT II INNOVATIONS IN STEEL AND STEEL INDUSTRY 6

Study of codes, standards, accepted industrial practices and procedures regarding the performance, expectations and acceptance criteria for steel, stainless steel in building Industry. Study of innovations in steel industry. Design and construction parameters developed by **INSDAG**.

UNIT III NON-FERROUS METALS 6

Aluminium and Aluminium Alloys: Manufacture, properties, durability, and uses.

Aluminium products- extrusions, foils, castings, sheets etc.
Other non-ferrous metals- copper, lead, zinc: Manufacture, grades, forms, sizes.

Study of **protection to non-ferrous metals and products** such as anodizing, powder coating, painting, stove enamelling, chromium plating, varnishing, melamine treatments.

UNIT IV PLASTICS 6

Polymerisation, thermoplastics, thermosetting plastics, elastomers, properties of plastics, strength, plastic forming process, uses of plastics and decorative laminates
Plastics in construction: polythene, poly propylene, PVC, ethylene, polycarbonate, acrylic flooring, PVC tiles.

UNIT V OTHER MATERIALS 6

Light-roofing materials: Asbestos, corrugated GI Sheets, corrugated aluminium sheet, PVC and others.

Adhesives, **Sealants and joint fillers**. Relative movement within buildings, types of sealants- elasto-plastic, elastic sealants- joint design- fire resistant sealants- gaskets- adhesives, epoxy, wall paper, bitumen, plastic pipe.
Materials for flooring finishes such as epoxy, oxy-chloride, hardeners, PVC, carpets.

TOTAL: 30 PERIODS

REQUIRED READING

1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, 1997.
2. S.K Duggal, Building Materials, Oxford and IBM Publishing Co, Pvt. Ltd.,
3. P.C Vargheese, Building Materials, Prentice Hall of India Pvt. Ltd., New Delhi, 110001

REFERENCES

1. Don A.Watson, Construction Materials and Process, McGraw Hill Co., 1972.
2. Arthur Lyons - Materials for Architects and Builders - An introduction Arnold, London, 1997.
3. Gorenc, Tinyou, Syam, Steel Desinger's Handbook, CBS Publishers and Distributors, New Delhi, Bangalore, 2005
4. Ralph Monletta, Plastics in Architecture – A guide to acrylic and Polycarbonate, Marcel Dekker Inc, New York, 1989
5. Jack M Landers, Construction Materials, Methods, Careers, Good Heart-WilCox Company, Inc Publishers, Homewood, IL, 1983

AD9304 BUILDING SERVICES III L T P/S C
3 0 0 3

AIM:
To familiarize the students with building services that support the functioning of a building in the area of internal environment control and fire and security systems.

OBJECTIVES:
- To expose the students to the science behind an air-conditioning and refrigeration system.
- To familiarize them with the various air- conditioning systems and their applications.
- To study the design issues for the selection of various systems and their installation
- To inform of the various ways by which fire safety design can be achieved in buildings through passive design.
- To familiarize the students with the various fire fighting equipment and their installation.

CONTENT:

UNIT I AIR CONDITIONING: BASIC REFRIGERATION PRINCIPLES 9
Thermodynamics – Heat – Temperature – Latent heat of fusion – evaporation, saturation temperature, pressure temperature relationship for liquid refrigerants, refrigeration cycle components – vapor compression cycle – compressors – evaporators – Refrigerant control devices – electric motors – Air handling Units – cooling towers

UNIT II AIR CONDITIONING: SYSTEMS AND APPLICATIONS 12
Air conditioning system for small buildings – window types, evaporative cooler, packaged terminal units and through the wall units split system b) Systems for large building – Chilled water plant – All Air system, variable air volume, All water system Configuring/ sizing of mechanical equipment, equipment spaces and sizes for chiller plant, cooling tower, Fan room, Circulation Pumps, Pipes, ducts

UNIT III AIR CONDITIONING: DESIGN ISSUES AND HORIZONTAL DISTRIBUTION OF SYSTEMS 6

Design criteria for selecting the Air conditioning system for large building and energy conservation measures - Typical choices for cooling systems for small and large buildings - Horizontal distribution of services for large buildings - Grouped horizontal distribution over central corridors, Above ceiling, In floor, Raised access floor, Horizontal distribution of mechanical services

UNIT IV FIRE SAFETY: DESIGN AND GENERAL GUIDELINES OF EGRESS DESIGN 10

Principles of fire behavior, Fire safety design principles _ NBC Planning considerations in buildings – Non- Combustible materials, egress systems, Exit Access – Distance between exits, exterior corridors – Maximum travel distance, Doors, Smoke proof enclosures
General guidelines for egress design for Auditoriums, concert halls, theatres, other building types, window egress, accessibility for disabled- NBC guidelines – lifts lobbies, stairways, ramp design, fire escapes and A/C, electrical systems.

UNIT V FIRE SAFETY: FIRE DETECTION AND FIRE FIGHTING INSTALLATION 8

Heat smoke detectors – sprinkler systems
Fire fighting pump and water requirements, storage – wet risers, Dry rises
Fire extinguishers & cabinets
Fire protection system – CO2 & Halon system
Fire alarm system, snorkel ladder
Configuring, sizing and space requirements for fire fighting equipments

TOTAL: 45 PERIODS

REQUIRED READINGS:

1. William H.Severns and Julian R Fellows, Air conditioning and Refrigeration, John Wiley and Sons, London, 1988
2. Fire Safety: nAtional Building Code of India 1983 published by Bureau of Indian Standards…

REFERENCES:

1. A.F.C. Sherratt, Air conditioning and Energy conservation, The Architectural Press, London, 1980
2. Design for fire safety (Andrew H Buchanan, John Wiley & Sons Ltd., New York)

AD9305 BUILDING CONSTRUCTION IV L T P/S C
3 0 0 3

AIM:

To provide an understanding of the various construction practices and details using steel and aluminum in the structural and non structural components of a building.

OBJECTIVES:

- To understand both in detail the methods of construction using steel for structural purposes such as roof trusses and roof covering.
- To understand both in detail the methods of construction of building components using steel such as staircases, rolling shutters, doors and windows.

- To understand both in detail the methods of construction of building components using aluminum such as doors and windows, partitions and curtain walling.
- To understand both in detail the methods of construction of building components using plastics such as doors and windows, partitions, roofs and curtain walling.

CONTENT:

UNIT I STEEL CONSTRUCTION 15

Structural steel sections- construction methods, methods of connections, steel in foundations, column-beam connections.

Steel roof trusses: Design and detailing. Types of trusses- north-light, butterfly truss, bow-string truss, space frames, portal frames, spacer decks- construction details of the above and the context in which they are used.

Steel roof covering. Types of roof covering using steel, aluminium, asbestos, and other sheets.

Exercises of the above through drawings and case studies.

Steel staircases: basic principles, types of staircase- straight flight, dog-legged, spiral and other types. Support conditions for stairs and details of handrail, baluster etc. and finishes for stairs.

Exercises of the above through case studies and drawings. 10

UNIT II STEEL DOORS, WINDOWS AND ROLLING SHUTTERS 10

Types of doors, windows – operable, sliding etc., methods of construction using steel.
Design and detailing of steel rolling shutter, collapsible gate, strong room, safe vault doors.

Exercises of the above through case studies and drawings.

UNIT III ALUMINIUM DOORS AND WINDOWS 10

Brief study of aluminium products- market forms of aluminium, aluminium extrusions- sketches of the above.

Aluminium doors and windows- design details. Doors- operable, sliding, pivoted, fixed. **Windows-** operable, sliding, fixed, louvered. Ventilators- top hung, bottom hung, pivoted, louvered.

Exercises of the above through case studies and drawings.

UNIT IV ALUMINIUM PARTITIONS, STAIRS, CURTAIN WALLING, ROOFING 15

Partitions- fixed partitions, false ceiling, shopfront, using aluminium – construction methods and details.

Aluminium staircase- design and construction details- including detailing of handrail and baluster.

Aluminium roofing- Northlighting, glazing bar, roofing sheets - construction details including gutter details

Aluminium Curtain walling- design and construction details.

Exercises of the above through case studies and drawings.

UNIT V PLASTICS 15

Primary plastic building products for walls, partitions and roofs - design and construction details.

Secondary building products for windows, doors, rooflights, domes, and handrails- design and construction details.

Exercises of the above through case studies and drawings.
Quality assurance measures and testing procedures related to material, workmanship and performance for the above topics.

TOTAL: 75 PERIODS

REQUIRED READING

1. Dr. B.C.Punmia, A Text book of Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 2001.
2. 2.T.D Ahuja and G.S. Birdie, Fundamentals of Building Construction, Dhanpat Rai Publishing Company Pvt. Ltd., New Delhi, 1996

REFERENCES

1. Alan Blanc, Architecture and Construction in Steel, E&FN Spon, London, 1993
2. Alan Blanc, Stairs, Steps and Ramps, Butterworth, Heinemann Ltd., 1999
3. 3.W.B. McKay, "Building Construction" Vol. 1 and 2, Longmans, UK, 1981.
4. Barry, Introduction to Construction of Buildings, Blackwell Publishing Ltd., Oxford, 2005
5. Barry, Introduction to Construction of Buildings Vol. 3, Blackwell Publishing Ltd., Oxford, 2005
6. Allan Brookes, Cladding of Buildings, E&FN Spon, London, 1998
7. R.M. Davis, Plastics in Building Construction, Battersea College of Technology, Blackie, London, 1966

AD9306	ARCHITECTURAL DESIGN IV	L	T	P/S	C
		0	0	16	8

AIM:

To explore the design of buildings addressing the socio – cultural & economic needs of contemporary urban society.

OBJECTIVES:

- To enable the students to understand the importance of spatial planning within the constraints of Development Regulations in force for urban areas.
- To enable the students to design for large groups of people in a socially and culturally sensitive manner, taking into account aspects such as user perception, crowd behaviour, large scale movement of people and identity of buildings.
- To emphasise on the importance of understanding the relationship between open space and built form, built form to built form and site planning principles involving landscaping circulation network and parking.
- To explore computer aided presentation techniques involving 2D and 3D drawings and models as required.

CONTENT:

Scale and Complexity: Buildings and small complexes that address the social and cultural needs of contemporary urban life (residential. Commercial, institutional) with a thrust on experiential qualities; multi bayed, multiple storied and circulation intensive; passive and active energy

Areas of concern/ focus

- behavioral aspects and user satisfaction
- socio-cultural aspects

- designing for the differently abled
- Building byelaws and rules
- Appropriate materials and construction techniques
- Climatic design

Typology/ project: Housing Projects- detached, semi-detached, row housing, cluster housing, apartment; housing and facilities for other user groups- Old age Home, orphanage, working women's hostel, home for physically and mentally challenged; Museum/ Art centre, Educational campus, R & D centre, shopping complex

TOTAL: 240 PERIODS

REQUIRED READING

1. Joseph De Chiara, Michael J Crosbie, Time Saver Standards for Building Types, McGraw Hill Professional 2001.
2. Julius Panero, Martin Zelnik, Human Dimension and Interior Space, Whitney Library of Design, 1975
3. Joseph De Chiara, Julius Panero, Martin Zelnik, Time Saver Standards for Interior Design and Space Planning, McGraw Hill 2001.
4. Ernst Neuferts Architects Data, Blackwell 2002
5. Ramsey et al, Architectural Graphic Standards, Wiley 2000

REFERENCES

1. Richard P. Dober, Campus Planning
2. Kanvinde, Campus Planning in India
3. Kevin Lynch, Site planning, MIT Press, Cambridge, 1967
4. Sam F. Miller, Design Process: A Primer for Architectural and Interior Design, Van Nostrand Reinhold, 1995

AD 9351 DESIGN OF STRUCTURES III

L	T	P/S	C
3	0	0	3

AIM:

The course is structured to teach the design of Reinforced concrete column, footings and retaining walls and to introduce the concept of pre-stressed concrete.

OBJECTIVES:

- To use 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 understand the principle, methods, advantages and disadvantages of pre stressed concrete.

CONTENT:

UNIT I LIMIT STATE DESIGN OF COLUMNS 10

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

UNIT II DESIGN OF FOOTINGS 10

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

UNIT III DESIGN OF RETAINING WALLS 10

Types of Retaining walls – Design of RCC cantilever Retaining walls.

UNIT IV DESIGN OF MASONRY WALLS 8

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

UNIT V INTRODUCTION TO PRESTRESSED CONCRETE 7

Principle of Prestressing – Methods of Prestressing, advantages and disadvantages.

TOTAL: 45 PERIODS

REQUIRED READING:

1. B.C. Punmia, Reinforced Concrete Structures, Vol. 1 & 2, - Laxmi Publications, Delhi, 1994.
2. IS 456:2000, Indian Standard, Plain and Reinforced Concrete – Code of Practice, Bureau of Indian Standards.
3. SP – 16, Design Aids for Reinforced Concrete to IS 456
4. National Building Code of India, 1983
5. IS 1905, Code of Practice for Structural Safety of Buildings

REFERENCES:

1. P.Dayaratnam , Design of Reinforced Concrete Structures, Oxford and IBH Publishing CO., 1983.
2. N.C.Sinha and S.K.Roy, Fundamentals of Reinforced Concrete, S.Chand and Co., New Delhi, 1983.
3. Ashok K.Jain Reinforced Concrete (Limit State Design) - Nemchand, Bros Roorkee 1983.
4. Krishna Raj, Prestressed Concrete Structures

AD9352 HISTORY OF ARCHITECTURE AND CULTURE VI L T P/S C
3 0 0 3

AIM:

To expose the students to the diverse postmodern directions in architecture in the Western world from the 1960s onwards as well as the architectural production of India from the end of colonial rule to the contemporary period.

OBJECTIVES:

- To introduce the context for the critiques of modern architecture and the evolution of new approaches.
- To study in detail the different postmodern directions in architecture.
- To understand the trajectory of architecture in India from the end of colonial rule to the contemporary period- architectural debates associated with nation, establishment of modern architecture and subsequent quest for Indianness.

CONTENT:

UNIT I CRITIQUING MODERNISM 9

TEAM X- Brutalism- projects of Smithsons and Aldo Van Eyck – writings of Jane Jacobs, Robert Venturi, Aldo Rossi and Christopher Alexander.

UNIT II AFTER MODERNISM – I 8

Conditions of Post Modernity- various postmodern directions in architecture– canonization of Post Modernism– works of Graves, Venturi, Moore- postmodern classicism- ideas and works of urbanism: Soleri, Archigram and Metabolism- Neo Rationalism.

UNIT III AFTER MODERNISM – II 8

High Tech architecture: Works of Stirling, Rogers and Piano – Deconstructivist theory and practice- Eisenmann, Hadid, Gehry, Libeskind, Tschumi

UNIT IV ALTERNATIVE PRACTICES AND IDEAS 9

Critical Regionalism- Ideas and works of Baker, Fathy, Ralph Erskine, Lucien Kroll, Ando, Bawa, Barragan, Siza

UNIT V POST INDEPENDENT ARCHITECTURE IN INDIA 11

Architectural debates associated with nation formation– early modernist architecture- post independence city planning: Chandigarh and Bhuvaneswar- influences on post independence architects- Architecture of Kanvinde, Raje, Doshi, Correa, Nari Gandhi, Raj Rewal- PWD architecture – new directions after 1960s- post- independent architecture of Chennai

TOTAL: 45 PERIODS

REQUIRED READING:

1. Kenneth Frampton , Modern Architecture: A Critical History , Thames & Hudson, London, 1994.
2. Diane Ghirardo , Architecture after Modernism, Thames & Hudson, London, 1990.
3. Miki Desai et. al., Architecture and independence, Oxford University Press,2000

REFERENCES:

1. Christopher Alexander, Pattern Language, Oxford University Press, Oxford.
2. Robert Venturi , Complexity and Contradiction in Architecture, 1977.
3. Aldo Rossi, The Architecture of the City, MIT Press, Massachusetts, 1982.
4. Michael Hays ed., Architecture Theory since 1968, CBA, 1999
5. Jane Jacobs, Deaths and Life of Great American Cities, Vintage, 2003
   James Steele, Hassan Fathy, Academy Editions
6. Kenneth Frampton ed, Charles Correa, The Perennial Press, 1998
7. William Jr. Curtis, Balkrishna Doshi, An Architecture for India, Rizzoli
8. Brian Brace Taylor, Geoffrey Bawa, Thames & Hudson

AD9353 PROFESSIONAL PRACTICE AND ETHICS I L T P/S C

3 0 0 3

AIM:

To provide the students a general understanding of the architectural profession and the importance of ethics in professional practice.

OBJECTIVES:

- To give an introduction to the students about the architectural profession.
- To enable the students to grasp the elementary issues concerning professional practice.
- To teach the students about the role of professional and statutory bodies in the conduct of professional practice.

- To teach the students about the importance of code of conduct and ethics in professional practice.
- To expose the students some of the important legislation which have a bearing on the practice of architectural profession.

CONTENT:

UNIT I INTRODUCTION TO THE ARCHITECTURAL PROFESSION 8

Importance of Architectural Profession – Role of Architects in Society – Alternatives open on entering the profession – Registration of Architects –Architect's office and its management (location, organization structure, responsibility towards employees, consultants and associates, elementary accounts, tax liabilities).

UNIT II PROFESSIONAL ETHICS AND CODE OF CONDUCT 9

Role of Indian Institute of Architects – Architects Act 1972 (intent, objectives, provisions with regard to architectural practice) – Council of Architecture (role and functions) – Importance of ethics in professional practice (Council of Architecture guide lines) – Code of conduct for architects as prescribed by Council of Architecture, punitive action for professional misconduct of an architect.

UNIT III ARCHITECT'S SERVICES & SCALE OF FEES 9

Mode of engaging an architect – Comprehensive services, partial services and specialised services – Scope of work of an architect – Schedule of services – Scale of fees (Council of Architecture norms) – Mode of payment – Terms and conditions of engagement.

UNIT IV ARCHITECTURAL COMPETITIONS 9

Importance of Architectural competitions – Types of competitions (open, limited, ideas competition) – Single and two stage competitions – Council of Architecture guidelines for conducting Architectural competitions –International Competitions (case studies).

UNIT V LEGAL ASPECTS & LEGISLATION 10

Copy rights and patenting – (provisions of copy right acts in India and abroad, copy right in architectural profession) – Easement – (meaning, types of casements, acquisition, extinction and protection) – Development Regulations in Second master plan for Chennai Metropolitan Area, Chennai Corporation Building rules 1972 – The Panchayat rules 1940 – Persons with Disabilities Act (provisions, responsibilities of architect and local body on creating barrier free environment).

TOTAL: 45 PERIODS

REQUIRED READING:

1. Architects Act 1972.
2. Publications of Handbook on Professional practice by IIA.
3. Publications of Council of Architecture-Architects (Professional conduct) Regulations 1989, Architectural Competition guidelines
4. Roshan Namavati, Professional practice, Lakhani Book Depot, Mumbai 1984.

REFERENCES:

1. J.J.Scott, Architect's Practice, Butterworth, London 1985.
2. Ar. V.S. Apte, Architectural Practice and Procedure, Padmaja Bhide, Pune, 2008.
3. Development Regulations of Second Master Plan for Chennai Metropolitan Area – 2026.
4. Chennai City Corporation Building Rules 1972.
5. Persons with Disabilities Act.
6. T.N.D.M. Buildings rules, 1972.

AD9354 **ARCHITECTURAL ACOUSTICS** **L T P/S C**
2 0 0 2

AIM:
To provide technical knowledge to integrate sound control in relation to building functions.

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

CONTENT:

UNIT I FUNDAMENTALS 5
Sound waves, frequency, intensity, wave length, measure of sound, decibel scale, speech and music frequencies, human ear characteristics - Tone structure.

UNIT II SOUND TRANSMISSION AND ABSORPTION 6
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 III NOISE CONTROL AND SOUND ABSORPTION 5
Types of noises, transmission of noise, transmission loss, noise control and sound insulation, remedial measures and legislation.

UNIT IV CONSTRUCTIONAL MEASURES 6
Walls/partitions, floors/ceilings, widow/doors, insulating fittings and gadjets, machine mounting and insulation of machinery.

UNIT V ACOUSTICS AND BUILDING DESIGN 8
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.

TOTAL: 30 PERIODS

REQUIRED 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.

REFERENCES:

1. B.J.Smith, R.J.Peters, Stephanie Owen - Acoustics and Noise Control - Longman Group Ltd., - New York, USA - 1982.
2. David Eagan concepts in Architectural Acoustics.
3. Harold Burris – Meyer and Lewis Good friend, Acoustics for Architects – Reinhold

AD9355 ARCHITECTURAL DETAILING L T P/S C
1 0 4 3

AIM:

Learning of building construction will not realize its full objectives unless it is supplemented by a thorough understanding of the methods for achieving sound detailing. It is necessary for the students to understand the principles of detailing as applicable to various structural and non-structural situations in Indian context.

OBJECTIVES:

- To enable students to appreciate the challenges in detailing for both the newly designed buildings as well as while carrying out additions and alterations to existing buildings.
- To enable students to understand the various Fittings, Furniture & Equipment (FFE) that are needed in buildings and their installation methods.
- To train students towards adopting an integrated approach while dealing with complex buildings incorporating various allied requirements.

UNIT I INTRODUCTION TO CURRENT DEVELOPMENTS IN BUILDING INDUSTRY 10

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

Recycled and ecological materials and energy saving materials: Straw-bale, card board, earth-sheltered structures, recycled plastics, recycled tyres, paper-crete, sandbags, photovoltaic, solar collectors, light-pipes, wind catchers.

Exercises of the above through case studies and drawings.

UNIT II DETAILING OF WALLS, ROOFS AND FLOORING FOR INSTITUTIONAL BUILDINGS 20

a) Detailing of a residence - selected spaces.
b) Detailing of classrooms, library (in school, college)
c) Detailing of lecture hall, auditorium, exhibition spaces

Exercises of the above through case studies and drawings.

UNIT III DETAILING OF WALLS, ROOF, FLOORING FOR COMMERCIAL BUILDINGS 20

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

Exercises of the above through case studies and drawings.

UNIT IV DETAILING OF BUILT-IN FURNITURE AND FITTINGS 10

Detailing of built-in elements like kitchen counters, cupboards, cabinets, toilets, toilet fitting.

Exercises of the above through case studies and drawings.

UNIT V DETAILING OF EXTERIOR AND INTERIOR ARCHITECTURAL ELEMENTS 15

Detailing of architectural elements like indoor fountains, water walls, transparent floors, street furniture, hard and soft landscape, swimming pools, water bodies and courtyard spaces.

Detailing of interior architectural elements in existing buildings (e.g. Staircase in bookshops, restaurants, playpen in restaurants, reception areas in hotel lobbies etc.)

Exercises of the above through case studies and drawings.

TOTAL: 75 PERIODS

REQUIRED READING

1. De Chiara and Callendar, Time Saver Standard Building Types, McGraw Hill Co,1980.
2. Richardson Dietruck, Big Idea and Small Building, Thames and Hudson, 2002
3. Edward D Mills, Planning – The Architecture Handbook, British Library Cataloguing in Publication Data, 1985

REFERENCES

1. Susan Dawson, Architect's Working Details(Volume 1-10), 2004
2. Swimming Pools, Lane Book Company, Menlo Park, California
3. Nelson L Burbank, House Carpentry Simplified, Simmons-Board- Man
4. Publishing Corporation, New York,
5. Landscape Construction
6. Grant W. Reid , Landscape Graphics, Whitney Library of Design, 1987

AD9356 ARCHITECTURAL DESIGN V L T P/S C
0 0 16 8

AIM:

To explore the design and form of building typologies that are the result of pressure on urban lands with a thrust on issues like urban land economics, technology and ecology.

OBJECTIVES:

- To create an awareness with regard to the design of green buildings and sustainable architecture.
- To inculcate the importance of services integration and construction in spatial planning in the context of design of High-rise buildings and service intensive buildings.
- To highlight on the importance of High rise buildings as elements of identity in urban areas and urban design principles that govern their design.
- To explore computer aided presentation techniques involving 2D and 3D drawings, walk through and models as required.

CONTENT:

Scale and Complexity: Advanced and complex problems involving large scale Multi-storeyed buildings and complexes for Residential/ Commercial/ Institutional/ Mixed-Use in an urban context with focus on visual characteristics, service integration and sustainable practices.

Areas of focus/ issues:

- sustainable building practices, green issues, alternative energy
- intelligent building techniques and service integration
- Architectural Detailing
- Advanced building practices

Typology/ project: office building, multi-use centre, convention center, multiplex, corporate complex, health care and hospitality building

TOTAL: 240 PERIODS

AD9401	**INTERNSHIP PROGRAM**	**L**	**T**	**P/S**	**C**
		x	**x**	**x**	**12**

AIM:

To expose students to the daily realities of an architectural practice through a one year intensive internship program

OBJECTIVES:

- To facilitate an understanding of the evolution of an architectural project from design to execution.
- To enable an orientation that would include the process of development of conceptual ideas, presentation skills, involvement in office discussions, client meetings, development of the concepts into working drawings, tendering procedure, site supervision during execution and coordination with the agencies involved in the construction process.

The internship program would be done in offices empanelled by the Institution and in firms registered under the Council of Architecture.

The progress of practical training shall be assessed internally through submission of log books supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees.

The students would be evaluated based on the following criteria:

1. Adherence to time schedule, Discipline.
2. Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings.
3. Ability to work as part of a team in an office.
4. Ability to participate in client meetings and discussions.
5. Involvement in supervision at project site.

At the end of the Internship program a portfolio of work done during the period of internship along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.

TOTAL: 36 WEEKS

AD9451 **INTERNSHIP PROGRAM II** **L T P/S C**

x x x 10

AIM: To expose students to the daily realities of an architectural practice through a one year intensive internship program

OBJECTIVES:

- To facilitate an understanding of the evolution of an architectural project from design to execution.
- To enable an orientation that would include the process of development of conceptual ideas, presentation skills, involvement in office discussions, client meetings, development of the concepts into working drawings, tendering procedure, site supervision during execution and coordination with the agencies involved in the construction process.

The internship program would be done in offices empanelled by the Institution and in firms registered under the Council of Architecture.

The progress of practical training shall be assessed internally through submission of log books supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees.
The students would be evaluated based on the following criteria:

1. Adherence to time schedule, Discipline.
2. Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings.
3. Ability to work as part of a team in an office.
4. Ability to participate in client meetings and discussions.
5. Involvement in supervision at project site.

At the end of the Internship program a portfolio of work done during the period of internship along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.

TOTAL: 36 WEEKS

AD9452 **DISSERTATION** **L T P/S C**

x x x 3

Design studio emphasize on explaining and understanding Architecture primarily through the mode of making. Dissertation offers an opportunity to look at architecture, history and design primarily through textual. However, like design, dissertation involves process of observation, reflection and abstraction. Students are encouraged to choose any topic of there interest. They may range from analyzing the works of an architect, history, typological changes, writing, design process and many more. The dissertation should state its objectives, followed by exhaustive documentation and arguments. The emphasis however, could vary according to the topic. The dissertation proposal in about 1500 words stating the topic issues to be explored and the scope must be submitted. After approval the work would be periodically reviewed. A well written report of a minimum 15,000 words must be submitted in the prescribed format, if any provided

by the University. The student would subsequently make a presentation of his/her work and defend them.

REFERENCES

1. Ian Border, Kurt Rueideu, The Dissertation, An Architectural Students Hand Book, Architectural Press, 2000
2. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons, 2002

AD9501 PROFESSIONAL PRACTICE AND ETHICS II L T P/S C
3 0 0 3

AIM:

To expose the students to advanced issues concerning architectural practice such as Tendering, Contracting including alternative practices in project execution, Arbitration and Project management and to enable them to understand the implications of globalisation on architectural practice.

OBJECTIVES:

- To further the students understanding of the professional practice.
- To enable the students to grasp the advanced issues concerning professional practice such as tendering, contracting including alternative practices in project execution, arbitration and project management.
- To expose the students to the implications of globalisation on professional practice with particular reference to WTO and GATS.
- To expose the students on some of the important legislations concerning architectural practice in India as well as International laws.

CONTENT:

UNIT I TENDER 9

Types of Tenders-Open and closed tenders-Conditions of tender-Tender documents-Tender notice-Concept of EMD-Submission of tender-Tender scrutiny-Tender analysis-Recommendations- E tendering (advantages, procedure, conditions).

UNIT II CONTRACT & ARBITRATION 10

Contents of Contract document (Articles of Agreement, Terms and Conditions of Contract, Important clauses – Appendix) – Arbitration (Definition, Advantages of arbitration, Sole and joint arbitrators, Role of umpires, Award, Conduct of arbitration proceedings) – Arbitration clause in contract agreement (role of architect, excepted matters) – case studies.

UNIT III NEW TRENDS IN PROJECT FORMULATION AND EXECUTION 9

Turn key offer (Expression of interest, Request for Proposal Document, Conditions for inviting turn key offer, finalisation of the bidder) – Current practices in Project execution [Build operate and Transfer (BOT), Build Operate Lease and Transfer (BOLT) and Build Operate and Own (BOO) and others – case studies.

UNIT IV IMPLICATIONS OF GLOBALISATION IN ARCHITECTURAL PRACTICE 8

Globalisation (meaning, advantages) – WTO and GATS and their relevance to architectural profession in India – Pre-requisites for Indian architects to work in other countries – Preparedness and infrastructure requirements for global practice – Entry of foreign architects in India (views for and against) – Information Technology and its impact on architectural practice.

UNIT V EMERGING SPECIALISATIONS FOR AN ARCHITECT 9

Construction management (Role, function, and responsibilities of a construction manager) – Project management (Concept, Objectives, Planning, Scheduling, Controlling and Role and Responsibilities of project manager) – Suitability of architect as construction / project manager – Programme evaluation review Techniques (event, activity, dummy network rules, graphical guidelines for network – PERT network).

TOTAL: 45 PERIODS

REQUIRED READING:

1. Ar. V.S. Apte, Architectural Practice and Procedure, Padmaja Bhide, Pune, 2008.
2. Architects Act 1972.
3. Dr. B.C. Punmiya and K.K. Khandelwal – Project Planning and Control with PERT / CPM, Laxmi Publications, New Delhi, 1987.
4. Arbitration Act.
5. WTO and GATT guidelines.

REFERENCES:

1. Architects Act 1972.
2. Publications of Handbook on Professional practice by IIA.
3. Publications of Council of Architecture-Architects (Professional conduct) Regulations 1989, Architectural Competition guidelines
4. Roshan Namavati, Professional practice, Lakhani Book Depot, Mumbai 1984.

AD9502 SPECIFICATIONS AND ESTIMATION L T P/S C
3 0 0 3

AIM:

To enable students understand the method of writing specifications for the various items of works involved in the building to expose him / her the procedure involved in estimating quantities of materials and works, various costs involved, various financial institutions and to prepare feasibility report of a project – simple projects will be introduced for preparation of specification and estimates.

OBJECTIVES:

- To inform to students the need and importance of specification, how to write specification – important aspects of the design of a specification.
- To inform to students the need for estimation the concept of abstract and detailed estimates based on measurement of materials and works.
- To inform to students cost control and budgeting and operation cost and to make students know the various financial agencies involved in land and building development.
- To enable students understand the importance of feasibility report, implication and importance of valuation and depreciation.

UNIT I SPECIFICATION 5

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

UNIT II SPECIFICATION WRITING 10

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 dadooring, woodwork for doors, windows frames and shutters, cement plastering, painting & weathering course in terrace.

UNIT III ESTIMATION 10

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 IV DETAILED ESTIMATE 10

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

UNIT V COST ESTIMATING & COST BUDGETTING 10

Function of Cost planner – liason with consultant, operation cost Exercise in variation, Cost adjustment and Cost analysis.

Role of various financial agencies for building & land development. Economic feasibility reports – valuation, depreciation and its implications.

TOTAL 45 PERIODS

REQUIRED BOOKS:

1. Estimating, Costing and Valuation(Professional practice) By Rangwala – S.C CHAROTAR PUBLISHING HOUSE, INDIA.

REFERENCES

1. Estimating & Costing – By B.W. Dutta (Revised by S. Dutta) UBS Publishers Distribution P.Ltd. India.
2. Estimating Costing and Specification. – By M. Chakraborti 21.B – Bhabananda Road, Calcutta – 700 026.
3. Estimating Costing and Valuation – By Gurcharan singh & Jagdish singh. Standard Publishers Distributors, 1705 – B, Nai sark post box no.1066. Delhi – 110 006.
4. T.N. Building practice, Vol:1 Civil Govt Publication.
5. PWD Standard Specifications. Govt Publication.

AD9503 HUMAN SETTLEMENT PLANNING L T P/S C
3 0 0 3

AIM:

To provide an overview of the vocabulary of Human settlements, while looking at planning concepts and processes in urban and regional planning and urban renewal.

OBJECTIVES:

- To introduce the elements of Human settlements and the classification of Human settlements.
- To outline the form and structure of settlements and illustrating through case studies.

- To familiarize the students with modern concepts of Settlement Planning.
- To outline the scope and content of Urban planning, Urban renewal and Regional planning and the various plans to be prepared.

UNIT I INTRODUCTION 9

Elements of Human Settlements – human beings and settlements – nature shells& Net work – their functions and Linkages – Anatomy & classification of Human settlements – Locational, Resource based, Population size & Occupational structure.

UNIT II FORMS OF HUMAN SETTLEMENTS 9

Structure and form of Human settlements – Linear, non-linear and circular –Combinations – reasons for development – advantages and disadvantages – case studies – factors influencing the growth and decay of human settlements.

UNIT III PLANNING CONCEPTS 9

Planning concepts and their relevance to Indian Planning practice in respect of Ebenezer Howard – Garden city concepts and contents – Patrick Geddes – Conservative surgery – case study – C.A. Perry – Neighborhood concept Le Corbusier – concept and case studies

UNIT IV URBAN PLANNING 9

Scope and Content of Master plan – planning area, land use plan and Zoning regulations – zonal plan – need, linkage to master plan and land use plan – planned unit development (PUD) – need, applicability and DCR

UNIT V URBAN RENEWAL AND RGIONAL PLANNING 9

Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation and Conservation – Regional Plan – Area delineation, Land utilization plan, hierarchical system of settlements, their sizes and functions

TOTAL: 45 PERIODS

REQUIRED READING:

1. C.L.Doxiadis, Ekistics, 'An Introduction to the Science of Human Settlements', Hutchinson, London, 1968.
2. Andro D.Thomas, 'Housing and Urban Renewal, George Allen and Unwin, Sydney, 1986.
3. Ministry of Urban Affairs and Employment, Government of India, New Delhi, 'Urban Development Plans: Formulation & Implementation' - Guidelines - 1996.

REFERENCES:

1. Madras Metropolitan Development Authority, 'Master Plan for Madras Metropolitan Area, Second Master Plan - 1995.
2. Government of India, 'Report of the National Commission on Urbanisation', 1988.
3. Hansen N., 'Regional Policy and Regional Integration' Edward Elgar, UK, 1996.
4. Centre for Human Settlements, Anna University, Chennai 'Development Plan for Uthokottai Taluk, Cheyyur Taluk', 1999.

AD 9504 **URBAN DESIGN** **L T P/S C**
2 0 2 3

AIM:

To understand the continuity of built environment from the macro to the micro scale as well as to make aware of the discipline of urban design

OBJECTIVES:

- To understand the scope and nature of urban design as a discipline
- To introduce the components of a city and their interdependent roles.
- To understand the evolution of historic urban form
- To learn to interpret the city in different ways and layers.
- To create awareness of contemporary urban issues as well as learn about possible ways to address them

UNIT I INTRODUCTION TO URBAN DESIGN 6

Components of urban space and their interdependencies- outline of issues/ aspects of urban space and articulation of need for urban design- scope and objectives of urban design as a discipline

UNIT II HISTORIC URBAN FORM 10

Western: morphology of early cities- Greek agora- Roman forum- Medieval towns- Renaissance place making- ideal cities – Industrialization and city growth- the eighteenth century city builders Garnier's industrial city- the American grid planning- anti urbanism and the picturesque- cite industrielle- citte nuovo-radiant city .

Indian: evolution of urbanism in India- Temple towns- Mughal city form- medieval cities - colonial urbanism- urban spaces in modernist cities: Chandigarh, Bhuvaneshwar and Gandhi Nagar- subsequent directions

UNIT III THEORISING AND READING URBAN SPACE 10

Ideas of Imageability and townscape: Cullen, Lynch- place and genius loci- collective memory- historic reading of the city and its artefacts: Rossi- social aspects of urban space: life on streets and between buildings, gender and class, Jane Jacobs, Wiiliam Whyte

UNIT IV ISSUES OF URBAN SPACE 10

Understanding and interpreting of urban problems/ issues- place-making and identity, morphology: sprawl, generic form, incoherence, privatized public realm- effects/ role of real estate, transportation, zoning, globalisation - ideas of sustainability, heritage, conservation and renewal- contemporary approaches : idea of urban catalyst, transit metropolis, community participation.

UNIT V BEST PRACTICE IN URBAN DESIGN

Contemporary case studies from developing and developed economies that offer design guidelines and solutions to address various issues/ aspects of urban space.

TOTAL: 45 PERIODS

REQUIRED READING:

1. A.E.J. Morris, History of Urban Form before the Industrial Revolution, Prentice Hall 1996
2. Edmund Bacon , Design of Cities , Penguin, 1976
3. Gordon Cullen, The Concise Townscape, The Architectural Press, 1978
4. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999
5. Time Saver Standards for Urban Design
6. Kevin Lynch, Image of the City

REFERENCES:

1. Jonathan Barnett, An Introduction to Urban Design
2. Lawrence Halprin, Cities, Reinhold Publishing Corporation, New York, 1964
3. Gosling and Maitland, Urban Design, St. Martin's Press, 1984
4. Urban Design Futures
5. Geoffrey Broadbent, Emerging Concepts in Urban Space Design

AD 9505	ARCHITECTURAL DESIGN VI	L	T	P/S	C
		0	0	16	8

AIM:

To explore the continuity and dynamics of urban form with a thrust on the interrelationships between the disciplines of architecture, urban design and town planning

OBJECTIVES:

- To understand the various components and aspects of the urban environment as well as their interrelationships
- To understand in specific components/issues such as public spaces, physical infrastructure, socio-cultural aspects- heritage, gender, class, dynamics of urban growth
- To understand people as users of the urban environment in various scales.
- To explore techniques of mapping and diagramming to understand the dynamic urban environment.
- To take design decisions in a comprehensive manner understanding their implications in the larger context.

CONTENT:

Scale and Complexity: projects involving the urban context and architecture in the urban context with a thrust on understanding interdependencies and formulating appropriate design directions.

Areas of focus/ issues:

- exploration of relationship between building and larger context
- contemporary processes in design
- appropriate architecture
- addressing issues in urban areas – transportation, sustainability, heritage, sprawl, place making, identity, collective memory
- Mixed use programming

Typology/ project: those involving large scale urban interventions as well as large scale projects which have impact on the urban context- revitalization and renewal of urban fragments, evolving guidelines for heritage areas, adaptive reuse, urban waterfront development, transportation nodes, new communities, multi-use urban complexes.

TOTAL: 240 PERIODS

REQUIRED READING:

1. Jonathan Barnett, An Introduction to Urban Design
2. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999
3. I. Jawgeih, Life between Buildings,- Using Public Space, Arkitektens Forleg 1987
4. Time Savers Standard for Urban Design
5. Urban design Futures

REFERENCES:

1. Edmund Bacon , Design of Cities , Penguin, 1976
2. Gordon Cullen, The Concise Townscape, The Architectural Press, 1978
3. Lawrence Halprin, Cities, Reinhold Publishing Corporation, New York, 1964
4. Gosling and Maitland, Urban Design, St. Martin's Press, 1984
5. Kevin Lynch, Site Planning, MIT Press, Cambridge 1967

AD9551	THESIS	L	T	P/S	C
		0	0	34	17

OBJECTIVE:

All the five years of architectural design culminate in the thesis Project to motivate students to involve in individual research and methodology. This is to train them in handling projects independently.

TOPICS OF STUDY

The main areas of study and research can include advanced architectural design, including contemporary design processes, urban design including urban-infill, rural settlements, environmental design, conservation and heritage precincts, landscape design, housing etc. However, the specific thrust should be architectural design of built environment.

METHOD OF SUBMISSION

The Thesis Project shall be submitted in the form of drawings, project report, models, slides and reports**.**

TOTAL: 510 PERIODS

REQUIRED READING:

1. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons, 2002

REFERENCES:

1. Donald Appleyard, The Conservation of European Cities, M.I.T. Press, Massachusetts
2. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999
3. Richard Kintermann and Robert small site planning for cluster Housing van nastrand reinhold company, Jondon/New York 1977.
4. Miller T.G. Jr., Environmental Sciences, Wadsworth Publishing Co. (TB)
5. Kevin Lynch - Site planning - MIT Press, Cambridge, MA - 1967.
6. Geoffrey And Susan Jellico, The Landscape of Man, Thames And Hudson, 1987.
7. Arvind Krishnan & Others, Climate Responsive Architecture, A Design Handbook for
8. Energy Efficient Buildings, TATA McGraw Hill Publishing Company Limited, New Delhi, 2001

AD9021 VERNACULAR ARCHITECTURE L T P/S C
3 0 0 3

AIM:

To study everyday architecture in the traditional context built in various cultural and geographical regions of India with an emphasis on building types, use, materials, construction and building process.

OBJECTIVES:

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

CONTENT:

UNIT I INTRODUCTION 8

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 II APPROACHES AND CONCEPTS 7

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

UNIT III VERNACULAR ARCHITECTURE OF THE WESTERN NORTHERN REGION OF INDIA 10

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 IV VERNACULAR ARCHITECTURE OF SOUTH INDIA 10

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 V WESTERN INFLUENCES ON VENRACULAR ARCHITECTURE OF INDIA 10

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.

TOTAL: 45 PERIODS

REQUIRED 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

REFERENCES:

1. V.S. Pramar, Haveli – Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.
2. Kulbushanshan Jain and Minakshi Jain – Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad 1992.
4. G.H.R. Tillotsum – The tradition of Indian Architecture Continuity, Controversy – Change since 1850, Oxford University Press, Delhi, 1989.
5. Carmen Kagal, VISTARA – The Architecture of India, Pub: The Festival of India, 1986.
6. S. Muthiah and others: The Chettiar Heritage; Chettiar Heritage 2000

AD9022 ENERGY EFFICIENT ARCHITECTURE L T P/S C
3 0 0 3

AIM:

In the face of a crisis of depleting resources the aim is to familiarize the student with passive design consideration and the use of non renewable sources of energy in buildings.

OBJECTIVES:

- To inform the need to use renewable sources of energy in view of the depleting resources and climate change.
- To familiarise the students with passive design considerations and passive heating and cooling of buildings and the various methods used.
- To inform about the importance of day lighting and natural ventilation in building design through analysis and case studies.

UNIT I ARCHITECTURE AND ENERGY 9

Solar System and Earth - Renewable Sources of Energy - Global Climates and Architecture in Historic Perspective - Contemporary Trends - Sustainability and Architecture

UNIT II SOLAR PASSIVE ARCHITECTURE 9

Design Considerations involving Site Conditions, Building Orientation, Plan form and Building Envelope - Heat transfer and Thermal Performance of Walls and Roofs

UNIT III PASSIVE HEATING 9

Direct Gain Thermal Storage of Wall and Roof - Roof Radiation Trap - Solarium - Isolated Gain

UNIT IV PASSIVE COOLING 9

Evaporative Cooling - Nocturnal Radiation cooling - Passive Desiccant Cooling - Induced Ventilation - Earth Sheltering - Wind Tower - Earth Air Tunnels

UNIT V DAY LIGHTING AND NATURAL VENTILATION 9

Daylight Factor - Daylight Analysis - Daylight and Shading Devices - Types of Ventilation - Ventilation and Building Design

TOTAL: 45 PERIODS

REQUIRED READING:

1. Manual on Solar Passive Architecture, IIT Mumbai and Mines New Delhi - 1999
2. Arvind Krishnan & Others, Climate Responsive Architecture, A Design Handbook for Energy Efficient Buildings, TATA McGraw Hill Publishing Company Limited, New Delhi, 2001

REFERENCES:

1. Fuller Moore, Environmental Control Systems, McGraw Hill INC, New Delhi - 1993
2. Sophia and Stefan Behling, Solpower, the Evolution of Solar Architecture, Prestel, New York, 1996
3. Givoni .B, Passive and Low Energy Cooling of Buildings, Van Nostrand Reinhold, New York, 1994

AD9023 STRUCTURE AND ARCHITECTURE L T P/S C
3 0 0 3

AIM:
This course is geared towards the integration of contemporary structural design in the form making process of architectural design. It will encourage the student to exercise judgement in areas of structure, form and process.

OBJECTIVES:
- To study evolution of structural systems through history.
- To familiarise the students with concepts of structural design through works of architects/ engineers.
- To study architectural expression through relevant case studied.
- To evaluate the understanding of the relationship between form & structure through a seminar.

UNIT I HISTORY OF STRUCTURAL DESIGN IN THE PRE INDUSTRIAL ERA 9
Development of monolithic and rock cut structures- trabeated construction-arcuate construction-vaults and flying buttresses- tents and masted structures and bridges through ancient and medieval history.

UNIT II HISTORY OF STRUCTURAL DESIGN IN THE POST INDUSTRIAL PERIOD 9
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 III CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – I 8
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 III CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – II 8
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 V SEMINAR 10

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.

TOTAL: 45 PERIODS

REFERENCES

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

AD9024 COMPUTER APPLICATIONS IN ARCHITECTUR L T P/S C
1 0 4 3

AIM:

This course aims to introduce the digital art to the students through series of sessions of demonstration of software and projects and to engage students with media in the specific Context and Design fundamentals.

OBJECTIVES:

- To impart training in video editing, image editing and vector editing.
- To impart training in Pixel and vector animation
- To impart training in web presentations to enable web publishing.
- To introduce students to Flash and Director to enable the production of presentations and CDs

CONTENT:

UNIT I VIDEO EDITING 15

Importing avis and mpegs, sequencing, cutting trimming, decrease and increase the speed of the movie, filters, transitions, output settings, saving the output.

UNIT II IMAGE EDITING & VECTOR EDITING 10

Using tools, transparency, layers, masking, effects, image adjustments, transform, text, history, gradient (fill types), cropping, image size, resolution, keyboard shortcuts, etc. image editing (pixel image types) using tools. Vector characters, bizer and grip editing, transform, fill types, text formatting, colour overlays, etc.

UNIT III PIXEL AND VECTOR ANIMATION 10

GIF animation and other various animation types, morphing etc. vector animation – using time line, understanding sequencing, using symbols (library), shape and motion TweeninG

UNIT IV WEB 9

Web presentations, understanding links & navigation, creating web pages, creating 'folder tree'

UNIT V NON LINEAR PRESENTATION (FLASH & DIRECTOR) 15

Importing files using standard and linking options. Using scripts and behaviors, understanding stage, cast and time line, using cast library, Tweening, using swf movie, presentation using voice over and presentation demos, creating auto run Cd-rooms

TOTAL: 60 PERIODS

REQUIRED READINGS:

1. Photoshop 7 Bible Professional Edition, Wiley John & Son INC, New York, DekeMcClelland, 2000.
2. Flash Web Design, The Art of Motion Graph, Curtis Hillman, New Riders Publishing, Indianapolis, IN. U.S.A, 2000

REFERENCES:

1. M.E. Morris, and R.J. Hinrichs, Web Page Design, Prentice Hall, 1996.
2. Mark Von Wodtke, Mind over Media : Creative Thinking Skills for Electronic Media, McGraw-Hill, New York, 1993

AD9025 THEORY OF DESIGN L T P/S C
3 0 0 3

AIM

The objective of the course is to provide an understanding of design as a discipline in order to enable self awareness and evolution in the students as designers.

OBJECTIVES:

- To understand design and the role of the designer in changing society.
- To familiarize the students with methodologies, theories and models of the design process.
- To inform students about the term creativity and introduce techniques which will enable creative thinking.
- To inform the approaches that generate ideas for architectural design and the importance of the participatory approach to design.

CONTENT:

UNIT I INTRODUCTION TO DESIGN 8

Definition and understanding of design- design in history -changing role of designer on society- different classifications of design according to scale, process, mode of production ,etc.,

UNIT II DESIGN METHODOLOGY MOVEMENT 10

Context for the rise of the design methodology movement- theories of the first generation and the second generation design methodologists- various models of the design process- focus on

the design problem: ideas of escalation/regression and wicked problem.

UNIT III CREATIVE THINKING 10

Understanding the term creativity- theories on thinking: left brain/ right brain, convergent and divergent thinking, lateral and vertical thinking- design spectrum from the logical to chance - blocks in creative thinking- various techniques to generate creativity

UNIT IV ARCHITECTURAL CREATIVITY 10

Design puzzles and traps - approaches to generate ideas for architectural design - types of concepts- personal philosophies and strategies of individual designers - channels to creativity in architecture

UNIT V DESIGN AND PEOPLE 7

Concept of pattern language- participatory approach to design - design as process

TOTAL: 45 PERIODS

REQUIRED READINGS:

1. Geoffrey Broadbent - Design in Architecture - Architecture and the human sciences - John Wiley & Sons, New York, 1981.
2. Bryan Lawson - How Designers Think, Architectural Press Ltd., London, 1980.
3. Anthony Antoniades, Poetics of architecture- Theory of design
4. Paul Alan Johnson, Theory of Architecture- Concepts, Themes, Practices
5. Christopher Alexander, Pattern Language, Oxford University Press.
6. James C. Snyder, Anthony J. Catanese, Timothy L. McGinty- Introduction to Architecture, McGraw Hill 1979.

REFERENCES

1 Victor Papanek, Design for the real world
2. Edward De Bono, Lateral Thinking
3. Design methods- Christopher Jones
4 Tom Heath - Method in Architecture, John Wiley & Sons, New York, 1984.
5. Nigel Cross - Developments in Design Methodology, John Wiley & Sons, 1984.
6. Evans, Helen Marie; Dumesnil, Carla Davis- An Invitation to Design, Macmillan Publishing Co., New York, 1982

AD9026 INTERIOR DESIGN L T P/S C
3 0 0 3

AIM:

The objective of the course to create awareness and exposure to interior design as a discipline that is closely related to the field of architecture and supplementing it. It would offer a rudimentary knowledge and overview of the various aspects of interior design.

OBJECTIVES:

- To introduce the vocabulary of interior design.
- To familiarize the students with an overview of interior and furniture design and design movements through history.
- To inform the various components of interior space and treatment and finishes for the same.
- To familiarize the students with the various components of interior design like lighting, landscaping and furniture.

CONTENT:

UNIT I INTRODUCTION TO INTERIOR DESIGN 9

Definition and process of interior design - vocabulary of interior design in terms of principles and elements - introduction to the design of interior spaces as related to typology and function, themes and concepts

UNIT II HISTORY OF INTERIOR AND FURNITURE DESIGN 9

Overview of interior and furniture design in the Western context through the ages relating to historical context, design movements and ideas -overview of folk arts and crafts of India with reference to their role in interior decoration**.**

UNIT III COMPONENTS OF INTERIOR SPACE- INTERIOR TREATMENT AND FINISHES 9

Treatment of components such as floors, ceilings, walls, partitions, window treatments, accessories, etc., in terms of their choice and design related to materials, methods of construction, colour, texture, etc., based on functional, aesthetic and psychological criteria

UNIT IV COMPONENTS OF INTERIOR SPACE- LIGHTING AND LANDSCAPING 9

Interior lighting - different types of lighting - types of lighting fixtures- their effects and suitability in different contexts

Interior landscaping elements: rocks, plants, water, flowers, fountains, paving, artifacts, etc., their physical properties and effects on spaces

UNIT V COMPONENTS OF INTERIOR SPACE- - FURNITURE 9

Furniture design as related to human comfort and function, materials and methods of construction, changing trends and lifestyles, innovations and design ideas - furniture for specific types of interiors: office furniture, children's furniture, residential furniture, display systems, etc.

TOTAL: 45 PERIODS

REQUIRED READING

1. Francis D.K.Ching, Interior Design Illustrated, V.N.R. Pub. NY 1987
2. Joseph DeChiara, Julius Panero, Martin Zelnik, Time Saver's Standards for Interior Design,McGraw-Hill Professional 2001
3. John F.Pile, Interior Design, John Wiley and Sons 2004
4. Dr.Saranya Doshi, Editor, The Impulse to adorn - Studies in traditional Indian Architecture, Marg Publications 1982
5. Steport - De - Van Kness, Logan and Szebely, Introduction to Interior Design, Macmillan Publishing Co NY 1980.

REFERENCES:

1. Helen Marie Evans, An Invitation to design, Macmillan Pub Co 1982
2. Julius Penero and Martin Zelnik, Human Dimensions and Interior space, Whitney Library of Design NY 1979
3. Inca-Interior Design Register, Inca Publications, Chennai 1989
4. Kathryn B.Hiesinger and George H.Marcus, Landmarks of twentieth Century Design; Abbey Ville Press 1993
5. Susanne Slesin and Stafford Cliff, Indian Style, Clarkson N.Potter, Newyork 1990

AD9027 EVOLUTION OF HUMAN SETTLEMENTS L T P/S C
3 0 0 3

AIM:

To enable the understanding of the factors that led to the growth of settlements and the changing scenario in the contemporary world.

OBJECTIVES:

- To outline the origins of human settlements and its determinants and their evolution through the course of history.
- To study the characteristics of Human settlements and the manifestation of settlements as expression of political aspirations.
- To understand the changing scenario in the context of globalization.

CONTENT:

UNIT I IMPORTANCE OF EVOLUTION OF HUMAN SETTLEMENTS 10

Origin of civilization, effects of civilization on Human settlements, determinants of Human settlements, ancients towns in India.

UNIT II HISTORICAL PERIODS AND GROWTH OF HUMAN SETTLEMENTS 10

Ancient, medieval, renaissance, industrial and post industrial age

UNIT III HUMAN SETTLEMENTS AND THEIR CHARACTERISTICS 9

Importance of shelter and its form and scale in city, concepts of land marks, axis and orientation, city as living commercial, cultural and functional entities.

UNIT IV HUMAN SETTLEMENTS AS POLITICAL EXPRESSION 10

Washington DC, Brazilia, Pretoria, Milton keyens, New Delhi. Chandigarh, contributions of Ebenezer Howard, Lewis Mumford, Patrick Geddes**.**

UNIT V HUMAN SETTLEMENTS IN A CHANGING WORLD 6

Global city and city origion and Global economy and Trade, information and communication technology and its impact on cities, city of the future and future of cities.

TOTAL: 45 PERIODS

REFERENCES:

1. Dutt B.B (1925) Town Planning in Ancient India, Thacker Spink & Co., Calcutta.
2. Mumford L (1961) The city in History, har court, Brace, and World, New York
3. Combaire J (1959) How cities Grew, The Florham Press, Madison, N.J.

REQUIRED READING:

1. Kosambi D.D. (1920) , The Culture and Civilisation of ancient Indian historical outline, Vikas publishing Home Pvt. Ltd. Delhi.
2. Sjoberg G (1960) The Preindustrial city, the Force Press, new York.
3. Combaire J (1959) How cities Grew, The Florham Press, Madison, N.J.
4. TAylor G (1949) Urban Geography, methucn, London
5. Pirenne H (1925) Medieval cities, Princeton Press
6. Dickinson R.E. (1961) The West European City, Routledge and Kegan Paul ltd., London

AD9028 **ART APPRECIATION** **L T P/S C**
3 0 0 3

AIM:

The objective of the course is to understand and appreciate art in terms of its form, content and context through the study of works of art over history in order to develop a sensitivity towards aesthetics which is a necessary component of architecture.

OBJECTIVES:

- 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 study Modern Art and the new directions that evolved in the 19th and 20th centuries.
- To inform the production of art in the Indian context through history and the contemporary manifestations.

CONTENT:

UNIT I INTRODUCTION TO ART 6

Definition of art - need for art – role of art – art reality, perception, representation- categories of art in terms of media and technique - appreciating art: form, content and context

UNIT II VOCABULARY OF ART 9

Introducing the vocabulary of art constituted by elements (line, shape, form, space, colour, light, value, texture) and principles (unity, variety, harmony, rhythm, balance, proportion, emphasis, contrast, movement)

UNIT III APPRECIATING ART – BEGINNINGS TO MODERN ART 10

Appreciating art through the study of art production in the West from the beginnings to the birth of modern art. Important works from the following art traditions will be studied and analysed in terms of their form, content and context

Prehistoric Art - Egyptian and Mesopotamian art Greek and Roman art– Medieval art - Renaissance and Baroque art - Neoclassicism - Romanticism - Realism

UNIT IV APPRECIATING ART- MODERN ART AND AFTER 10

Appreciating art through the study of art production in the West over history from modern art till the present. Important works from the following art traditions will be studied and analysed in terms of their form, content and context :

Context for new directions in art in the late 19th and early 20th century - Impressionism - post Impressionism – Fauvism- Expressionism- Cubism – Dadaism – Surrealism - abstract art – Futurism - Constructivism – Suprematism –- De Stijl - Abstract Expressionism - Pop art - Op art- new forms and media of art

UNIT V APPRECIATING ART- INDIAN ART 10

Appreciating art through the study of art production in India over history. Important works from the following art traditions will be studied and analysed in terms of their form, content and context

Indus Valley Art - Hindu Buddhist and Jain art - Mughal and Rajput miniatures - art during the colonial period - modern Indian Art.

TOTAL :45 PERIODS

REQUIRED READING

1. Fred, S. Kleiner, Gardener's Art through Ages, Harcourt College Publishers, 2001
2. Bernard S. Myers, Understanding the Arts, Holt,Rinehart and Winston Inc, 1964
3. Edith Thomory- a History of Fine Arts in India and the West, Orient Longman Publisher's Pvt. Ltd, New Delhi
4. H.H. Arnason, History of Modern Art, Thames and Hudson, 1977

REFERENCES:

1. The Penguin Dictionary of Art and Artists - Peter and Linda Murray - Penguin books 1989.
2. E.H. Gombrich, The Story of Art, Phaidon 2002
3. E.H.Gombrich, Art and Illsuion, Phaidon, 2002
4. Indian Art since the early 1940s- A Search for Identity- Artsists Handicrafts Association of Cholamandal Artists Village, Madras,1974
5. A.K.Coomaraswamy, Fundamentals of Indian Art, Historical Research Documentation Programme, Jaipur, 1985

AD9071 URBAN HOUSING L T P/S C
3 0 0 3

AIM:

The course is designed to inform about the process of housing in the context of the scarcity housing resources in India.

OBJECTIVES:

- To outline the Issues concerning housing in the Indian Context and the various agencies involved in the production of housing.
- To outline factors that influence housing affordability and to familiarize students with various schemes and policies of the government in the housing sector.
- To inform about the standards and guidelines for housing
- To inform about the various housing design typologies and the processes involves in housing project development.

CONTENT:

UNIT I INTRODUCTION TO HOUSING AND HOUSING ISSUES – INDIAN CONTEXT 10

Housing and its importance in Architecture and its relationship with neighbourhood and city planning.

Housing demand and supply – National Housing Policy – Housing agencies and their role in housing development – impact of traditional life style – Rural Housing, Public, private sector housing.

UNIT II SOCIO-ECONOMIC ASPECTS 10

Social economic factors influencing housing affordability – equity in housing development sites and services/-slum upgradation community participation – Indira Awas Yojana
Crime prevention, Health principles in Housing.

UNIT III HOUSING STANDARDS 7

UD PFI – guide lines, standard and regulations – DCR – performance standards for housing.

UNIT IV SITE PLANNING AND HOUSING DESIGN 10

Site Planning:

Selection of site for housing, consideration of physical characteristics of site, locational factors, orientation, climate, topography – Landscaping.

Housing design:

Traditional housing, row housing, cluster housing – apartments and highrise housing relating to Indian situations – case studies in India – integration all types of services, parking, incorporation of green sustainable practices –prefabrication in housing.

UNIT V HOUSING PROCESS 8

Various stages and tasks in project development –community participation and housing management – Environmental aspects and national calamities and disaster mitigation**.**

TOTAL: 45 PERIODS

REFERENCES:

1. Richard Kintermann and Robert small site planning for cluster Housing van nastrand reinhold company, Jondon/New York 1977.
2. Joseph de Chiara and others – Time saver standards for Housing and Residential development, Mcgraw Hill Co, New York 1995.
3. Forbes Davidson and Geoff Payne, Urban projects Manual. Liverpool University press, Liverpool 1983.
4. Christopher Alexander, A pattern Language, Oxford University press, New York 1977
5. HUDCO publications – Housing for low income, sector model.

AD9072	DIGITAL ART	L	T	P/S	C
		1	0	4	3

AIM:

This unit aims to introduce the digital art to the students through series of sessions of demonstration of software and projects.

OBJECTIVES:

- Through a project the student is taught video, image and vector editing using editing software.
- To enable the creation of interactive patterns by introducing scripting.
- To enable synchronization of sound with patterns generated.
- To enable presentation using voice over and production of CD roms.

UNIT I VIDEO EDITING, IMAGE EDITING & VECTOR EDITING 15

Tools: Importing avis and mpegs, sequencing, cutting trimming, decrease and increase the speed of the movie, filters, transitions, output settings, saving the output with the help of video editing software like ADOBE PREMIERE. Image editing (pixel image types) using tools, Vector

characters, bizer and grip editing, transform, fill types, text formatting, colour overlays, etc in ADOBE PHOTOSHOP

UNIT II OVERLAPPING TECHNIQUE(2D ANIMATION WITH MOVIE) 20

Project: Import Movie file in the editing software like premiere and overlap the 2D Animation film created using Flash. Synchronize the sound and create a perfect blend of AVI and 2D Animation film.

UNIT III PATTERNS THROUGH SCRIPTING 15

Project: Create 2d interactive patterns using basic scripting in Flash/Director. Through this scripting tools will be taught.

Tools: Scripting in software like Flash/ Director could be explored

UNIT IV DESIGN GENERATION USING SOUND 10

Project: Create forms/ patterns synchronized to sound file, through this relationship between sound and forms/ patterns will be explored

Tools: Software like fruity loops and sound forge could be explored

UNIT V SPACE GENERATION 15

Project: Students would identify a metaphor (literature, movies, and music albums) and create spaces using the same. The proposal must be discussed with course faculty prior to presentation.

Tools: Importing files using standard and linking options. Using scripts and behaviors, understanding stage, cast and time line, using cast library, Tweening, using swf movie, presentation using voice over and presentation demos, creating auto run Cd-rooms.

TOTAL: 75 PERIODS

REQUIRED READING:

1. Photoshop 7 Bible Professional Edition, Wiley John & Son INC, New York, DekeMcClelland,
2. Flash Web Design, The Art of Motion Graph, Curtis Hillman, New Riders Publishing, Indianapolis, IN. U.S.A, 2000

REFERENCES:

1. M.E. Morris, and R.J. Hinrichs, Web Page Design, Prentice Hall, 1996.
2. Mark Von Wodtke, Mind over Media : Creative Thinking Skills for Electronic Media, McGraw-hill, New York, 1993

AD9073	PRINCIPLES OF TRADITIONAL INDIAN ARCHITECTUR	L	T	P/S	C
		3	0	0	3

AIM:

To provide theoretical knowledge base on the uniqueness of Indian traditional Architecture principles, the meaning of space, the manifestation of energy, the selection of site and how integration of built form with site happens at metaphysical level based on articulation of celestial grid.

OBJECTIVES:

- To introduce the principles of Vastu and Vaasthu and relationship between building and site.
- To familiarize the students with the units of measurement in traditional architecture.
- To introduce concepts of orientation and cosmogram according to the Vasthu Purusha Mandala.

- To study the detailing and design of various building components and their material and method of construction.

CONTENT:

UNIT I INTRODUCTION 9

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 II MEASUREMENT AND RESONANCE TO VIBRATION 9

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 III SITE PLANNING AND COSMOGRAM 9

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 IV COMPONENTS AND DETAILING 9

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

UNIT V MATERIALS AND CONSTRUCTION 9

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.

TOTAL: 45 PERIODS

REQUIRED READINGS:

1. Dr.V.Ganapati Sthapati - :Sthapatya Veda" Dakshina Publishing House, Chennai-41, India, 2001.
2. Stella Kramrisch - The Hindu Temple Vol.I Motital Banarsidass Publishers Pvt. Ltd., Delhi - 1991.
3. K.S.Subramanya Sastri - Maya Matam - Thanjavur Maharaja Sarjoji Saraswathi Mahal Library - Thanjavur - 1966.
4. Dr.V.Ganapati Sthapati - :Sthapatya Veda" Dakshina Publishing House, Chennai-41, India, 2001

REFERENCES:

1. Bruno Dagens - Mayamatam, Vol.I & II IGNCA and Motilal Bamarsidars Publishers Pvt. Ltd., Delhi - 1994.
2. Dr.V.Ganapati Sthapati - Vastu Purusha Mandalam, Dakshina Publishing House, Chennai, 1998.
3. Ananda Kentish Coomaraswamy, Symbolism of Indian Architecture" – Historical
4. Research Documentation Programme, Jaipur, 1983
5. Stella Kramrisch - The Hindu Temple Vol. II Motital Banarsidass Publishers
6. Pvt. Ltd., Delhi - 1991.

AD9074 **LANDSCAPE AND ECOLOGY** **L T P/S C**
3 0 0 3

AIM:

To familiarize students with landscape architecture as a discipline and the many facets it entails.

OBJECTIVES:

- To familiarize students with the various elements of landscape architecture and the principle of landscape design.
- To provide an overview of ecological balance and impacts of human activities and stress the need for environmental protection and landscape conservation.
- To develop and strengthen the competence in dealing with the analytic, artistic and technical aspects of designing open spaces at different scales.

CONTENT:

UNIT I INTRODUCTION 7

Introduction to landscape architecture, ecology, ecological balance, landscape conservation, reclamation and landscaping of derelict lands, environmental impact assessment.

UNIT II ELEMENTS IN LANDSCAPE DESIGN 10

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

UNIT III GARDEN DESIGN 10

Landscape and garden design in history - Japanese, Italian Renaissance and Moghul gardens in India, Study of notable examples, Spatial development in landscape design.

UNIT IV SITE PLANNING 10

Organisation of spaces - circulation, built form and open spaces, site planning and micro climate, site planning for neighbourhood parks, children's play area and campus development.

UNIT V LANDSCAPING OF FUNCTIONAL AREAS 8

Urban open spaces and principle of urban landscape; Street landscaping, landscape design for waterfront areas and functional areas in urban centers; green roofs

REQUIRED READING:

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

REFERENCES:

1. T S S for Landscape Architecture, Mc Graw Hill, Inc, 1995
2. Grant W Reid, From Concept to Form in Landscape Design, Van Nostrand Reinhold Company , 1993.
3. Brian Hacket, Planting Design, Mc Graw Hill, Inc, 1976
4. Handbook of urban landscape, Cliff Tandy, Architectural press, 1973
5. T.K. Bose and Chowdhury, Tropical Garden Plants in Colour, Horticulture And Allied Publishers, Calcutta, 1991.

AD9075 **CONSTRUCTION TECHNOLOGY** **L T P/S C**
3 0 0 3

AIM:

The course is designed to give the students an overview of the building industry and the various advancements in the area of construction technology and practice

OBJECTIVES:

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

CONTENT:

UNIT I GENERAL BUILDING REQUIREMENTS 6

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

UNIT II CONSTRUCTION SYSTEMS 10

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 III CONSTRUCTION PRACTICE 10

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

UNIT IV CONSTRUCTION EQUIPMENT 10

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 Guniting equipments - Air compressors - welding equipment - cranes and other lifting devices Choice of construction equipment for different types of works.

UNIT V CONSTRUCTION MANAGEMENT 9

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

TOTAL : 45 PERIODS

REQUIRED 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

REFERENCES:

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

AD9076	ARCHITECTURAL CONSERVATION	L	T	P/S	C
		3	0	0	3

AIM:

This course is designed to address Conservation as an idea that enhances quality of life, as an effective planning strategy, a criticism of universal modernism and a way to address issues of memory and identity. An overview of current status of conservation in India is also provided

OBJECTIVES:

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

CONTENT:

UNIT I INTRODUCTION TO CONSERVATION 9

Understanding Heritage. Types of Heritage. Heritage 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 II CONSERVATION IN INDIA 9

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 III CONSERVATION PRACTICE 9

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

UNIT IV URBAN CONSERVATION 9

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 V CONSERVATION PLANNING 9

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

TOTAL: 45 PERIODS

REQUIRED READING

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

REFERENCES:

1. B.K. Singh, State and Culture, Oxford, New Delhi
2. A.G. K. Memon ed. Conservation of Immovable Sites, INTACH Publication, N.Delhi.
3. Seminar Issue on Urban Conservation.

AD9077 CONTEMPORARY PROCESSES IN ARCHITECTURE L T P/S C
3 0 0 3

AIM:

This course is designed to understand the relation between digital technology, media and architecture. It is also looks at how technology enables critical engagement with architecture and is addressed through theories and practices proposed by contemporary architects.

OBJECTIVES:

- To investigate various theories of media and its influence on the perception of space.
- To study the various aspects of Digital Architecture and its exploration through emerging phenomena that relies on abstraction of ideas.
- To study the works of contemporary architects who have illustrated the influence of the digital media in evolving architecture. This is to be presented as Seminars.

CONTENT:

UNIT I INTRODUCTION 6

Investigation of contemporary theories of media and their influence on the perception of space and architecture. Technology and Art – Technology and Architecture – Technology as Rhetoric – Digital Technology and Architecture

UNIT II ASPECT OF DIGITAL ARCHITECTURE 9

Aspects of Digital Architecture – Design and Computation – Difference between Digital Process and Non-Digital Process – Architecture and Cyber Space – Qualities of the new space – Issues of Aesthetics and Authorship of Design – Increased Automatism and its influence

UNIT III CONTEMPORARY PROCESS 10

Emerging phenomena such as increasing formal and functional abstractions – Diagrams – Diagrammatic Reasoning – Diagrams and Design Process – Animation and Design – Digital Hybrid

UNIT IV GEOMETRIES AND SURFACES 10

Fractal Geometry –- Shape Grammar - Hyper Surface - Liquid Architecture – Responsive Architecture.

UNIT V SEMINAR 10

Students would make presentation on the ideas and works of the following architects. The proposal must be discussed with course faculty prior to presentation. Greg Lynn, Reiser + Umemotto, Lars Spuybroek / NOX Architects, UN studio, Diller Scofidio, Dominique Perrault, Decoi, Marcos Novak, Foreign Office Architects, Asymptote, Herzog and de Meuron, Neil Denari.

TOTAL: 45 PERIODS

REQUIRED READING

1. Walter Benjamin, Practices of Art in the Age of Mechanical Reproduction, in illumination, Colin press, 1977
2. Ignasi de Sola Morales, High Tech: Functionalism of Rhetoric
3. Work of Architecture in the Age of Mechanical Reproduction, Differences MIT press,1997.
4. Peter Eisenmann, Vision Unfolding, Architecture in the Age of Electronic Media.
5. William J Mitchell, the Logic of Architecture: Design, Computation and Cognition. MIT Press, Cambridge, 1995
6. Ali Rahim, Contemporary Process in Architecture, John Wiley & Sons, 2000
7. Contemporary Techniques in Architecture, Halsted Press, 2002
8. Peter Eisenmann, Diagram: An Original Scene of Writing, Diagram Diaries
9. Grey Lynn, The Folded, The Pliant and The Supple, Animate form

REFERENCES:

1. Gillian Hunt, Architecture in the Cybernetic Age, Architectural Deign Profile no. 136
2. Sarah Chaplin, Cyber Space Lingering on the Threshold, Architecture, postmodernism and difference, Architectural Design Profile 118
3. L. Convey et. al. Virtual Architecture, Batsford, 1995.
4. Rob Shields (ed.) Cultures of the internet: Virtual Spaces, Real Histories, Living bodies, Sage, London
5. John Beckman, The Virtual Dimension, Architecture, Representation and Crash Culture, Princeton Architecture Press, 1998.
6. William J Mitchell, City of bits: Space, Place and the Infobahn. MIT Press, Cambridge, 1995
7. Marcos Novak, invisible Architecture: An Installation for the Greek Pavilion, Venice Biennale, 2000

AD9078 SAFETY SYSTEMS AND BUILDING MANAGEMENT L T P/S C
3 0 0 3

AIM:

The course is designed to impart basic knowledge in Safety, security and building automation and integrated building management systems

OBJECTIVE:

- To familiarize the student with minimum safety requirements for a high rise building with exposure to NBC.
- To study fire alarm systems and fire suppression systems and their installation..
- To inform students of various types of security systems and their application in building.
- To outline the importance and onjectives of an Integrated building management system.

CONTENT:

UNIT I SAFETY REQUIREMENTS

Minimum safety requirements for a building, particularly for a high rise building as per the National Building Code. **7**

UNIT II FIRE ALARM SYSTEMS 10

Objectives of a Fire Alarm System, Essential components of a Fire Alarm System, Technology of detection, Type of Statutory Standards followed in direction, Explaination on the essential

clauses, various types of technologies employed in the Fire Alarm System, basic knowledge on how a Fire Alarm System is designed and installed

UNIT III FIRE SUPPRESSION SYSTEMS: 10

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

UNIT IV SECURITY SYSTEMS 10

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

UNIT V INTEGRATED BUILDING MANAGEMENT SYSTEM 8

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

TOTAL: 45 PERIODS

REQUIRED READING:

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

REFERENCES:

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

AD9079 ADVANCED STRUCTURES L T P/S C
3 0 0 3

AIM:

The aim of this course is design pre-stressed concrete beams and the estimation of the loss of pre- stressing.

OBJECTIVES:

- To study loss of pre- stress and design requirements for determinate beams.
- To study the design of flat slabs and High Rise structures.
- To study the concepts of tensile structures, grids, domes, shells and folded plates.

CONTENT:

UNIT I PRESTRESSED CONCRETE 10

Losses of Prestress – Design requirements – Design of determinate beams**.**

UNIT II FLAT SLABS 8

Proportioning of flat slabs – Methods of analysis and design – Design of flat slabs – Shear in flat slab – Code provisions.

UNIT III HIGH – RISE BUILDINGS 10

Introduction – Load action in high rise buildings – Various structural systems – Approximate analysis and Design of frames for gravity and horizontal loadings.

UNIT IV TENSILE STRUCTURES 10

Concept, Development, Laws of formation, Merits and Demerits of Pneumatic structures – Basic principles, Various forms, Merits and Demerits of cable structures.

UNIT V GRIDS, DOMES AND FOLDED PLATES 7

Grids – Types of Grids – Domes – Geodesic domes – Shells and various forms – folded plates.

TOTAL: 45 PERIODS

REQUIRED READING:

1. B.C. Punmia, Reinforced Concrete Structures, Vol. 1 & 2, - Laxmi Publications, New Delhi, 1994.
2. N. Subramanian, Principles of Space Structures – Wheeler and Co., Allahabad, 1983

REFERENCES :

1. P. Dayarathnam, prestressed concrete structures, Oxford and IBM publishing Co., New Delhi, 1982
2. Wolfgang Schueller – High Rise Building Structures, John Wiley & sons, New York 1976.
3. Frei Otto – Tensile structures Volume 1, Pneumatic structures, Volume 2, cable structures . The MIT press, London.
4. Tall Building structures – Analysis & Design – Bryan Stafford smith. John wiley .
5. Structural system for tall buildings – Council on tall buildings and urban habitat – Mc Graw Hill.
6. Pneumatic structures, Thomas Herzog – Crosby Lockwood staples, London.

AD9080 SUSTAINBLE PLANNING AND ARCHITECTURE L T P/S C
3 0 0 3

AIM:
To provide an overview of the concepts of sustainable practices in planning the built environment.

OBJECTIVES:
- To understand the concept of sustainability and sustainable development
- To inform the various issues like climate change, ecological footprint, etc.
- To understand low impact construction practices, life cycle costs and alternative energy resources.
- To familiarize the students with the various rating systems for building practices with case studies.
- Through case studies to understand the concept of sustainable communities and the economic and social dimensions.

UNIT I **7**
Concept of Sustainability – Carrying capacity, sustainable development – Bruntland report – Ethics and Visions of sustainability.

UNIT II **8**
Eco system and food chain, natural cycles – Ecological foot print – Climate change and Sustainability.

UNIT III **10**
Selection of materials Eco building materials and construction – Biomimicry, Low impact construction, and recyclable products and embodied energy. Life cycle analysis. Energy sources – Renewable and non-renewable energy.

UNIT IV **10**
Green building design – Rating system –LEED, GRIHA, BREEAM etc., case Studies.

UNIT V **10**
Urban ecology, social and economic dimensions of sustainability, urban heat Island effects, sustainable communities – Case studies.

REFERENCES:

1. Sustainable Architecture and Urbanism: Concepts, Technologies and examples by Gauzin-Muller(D) – Birkhauser 2002.
2. Eco-Tech : Sustainable Architecture and High Technology by Slessor© - Thames and Hudson 1997.
3. Ecodesign : A manual for Ecological Design by Yeang(K) – Wiley Academy 2006.

REQUIRED READINGS:

1. Sustainable Architecture : Low tech houses by Mostaedi (A) – Carles Broto 2002.
2. HOK guide book to sustainable design by Mendler (S) & Odell (W) – John willey and sons 2000.
3. Environmental brief : Path ways for green design by Hyder(R) – Taylor and Francis 2007.
4. Green Architecture: Design for a sustainable future by Brenda and Vale (R) – Thames and Hudson 1996.

TOTAL: 45 PERIODS

AD9081 EARTHQUAKE RESISTANT ARCHITECTURE L T P/S C
3 0 0 3

AIM:
To provide basic knowledge of earthquake resistant design concepts to students of Architecture, as it has become evident in recent years that some of the seismically active areas of the world are located within Indian and lives lost during past earthquakes due to damage of homes and other buildings are enormous.

OBJECTIVES:
- To understand the fundamentals of Earthquake and the basic terminology
- To inform the performance of ground and buildings.
- To familiarsie the students with design codes and building configuration
- To understand the various types of construction details to be adopted in a seismic prone area.
- To apply the knowledge gained in an architectural design assignment

CONTENT:
UNIT I
Fundamentals of earthquakes
Earths structure, seismic waves, plate tectonics theory, origin of continents, seismic zones in India.
Predictability, intensity and measurement of earthquake
Basic terms- fault line, focus, epicentre, focal depth etc. **7**

UNIT II
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 **8**

UNIT III
I. Seismic design codes and building configuration
Seismic design code provisions – Introduction to Indian codes
Building configuration- scale of building, size and horizontal and vertical plane, building proportions, symmetry of building- torsion, re-entrant corners, irregularities in buildings- like short stories, short columns etc. **8**

UNIT IV
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 **10**

UNIT V
III. Urban planning and design
a) Vulnerability of existing buildings, facilities planning, fires after earthquake, socio-economic impact after earthquakes.
b) Architectural design assignment- Institutional masonry building with horizontal spread and height restriction, multi-storeyed RC framed apartment or commercial building. **12**

TOTAL: 45 PERIODS

REQUIRED READING:

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.

REFERENCES

1. Ian Davis (1987) Safe shelter within unsafe cities” Disaster vulnerability and rapid urbanization, Open House International, UK
2. Socio-economic developmental record- Vol.12, No.1, Jan-Feb 2005
3. Learning from Practice- A review of Architectural design and construction experience after recent earthquakes- Joint USA-Italy workshop, Oct.18-23, 1992, Orvieto, Italy.