REGULATION 2015

B.ARCH :: I – X SEMESTERS

CURRICULUM AND SYLLABUS

SEMESTER – I

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 1LI	Architectural Basic Design I	0	0	14	6
	THEORY				
BAR 101	Theory of Architecture I	3	0	0	3
BAR 102	History of Architecture I	3	0	0	3
BAR 103	Mechanics of structures I	3	0	0	3
BMA 104	Mathematics	3	0	0	3
BEN 105	English	2	0	1	3
	THEORY / STUDIO				
BAR 106	Architectural Graphics & Art studio	0	0	6	3
	TOTAL	**35**			**24**

SEMESTER – II

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 2LI	Architectural Design - II	0	0	11	6
	THEORY				
BAR 201	Theory of Architecture II	3	0	0	3
BAR 202	History of Architecture II	1	0	2	3
BAR 203	Mechanics of structures II	3	0	0	3
BAR 204	Personality development, soft skills enhancement	3	0	0	3
	THEORY / STUDIO				
BAR 205	Architectural Graphics II	0	0	6	3
BAR 206	Materials & construction I	2	0	4	4
	TOTAL	**35**			**25**

SEMESTER – III

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 3LI	Architectural Design - III	0	0	13	6
	THEORY				
BAR 301	Building services I	3	0	0	3
BAR 302	History of Architecture III	3	0	0	3
BAR 303	Design of structures I	3	0	0	3
BAR 304	Climate & Environmental studies	3	0	0	3
	THEORY / STUDIO				
BAR 305	Computer studio I	0	0	4	3
BAR 306	Materials & construction II	2	0	4	4
	TOTAL	**35**			**25**

SEMESTER – IV

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 4LI	Architectural Design - IV	0	0	13	6
	THEORY				
BAR 401	Building services II	3	0	0	3
BAR 402	History of Architecture IV	3	0	0	3
BAR 403	Design of structures II	3	0	0	3
BAR 404	Site planning & Landscape Architecture	0	0	4	3
BAR 405	Climate & Built Environment	3	0	0	3
	THEORY / STUDIO				
BAR 406	Materials & construction III	2	0	4	4
	TOTAL	**35**			**25**

SEMESTER – V

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 5LI	Architectural Design - V	0	0	13	6
	THEORY				
BAR 501	Building services III	3	0	0	3
BAR 502	History of Architecture V	3	0	0	3
BAR 503	Design of structures III	3	0	0	3
BAR 5E1	**ELECTIVE I**	3	0	0	3
	THEORY / STUDIO				
BAR 5L2	Computer studio - II	0	0	4	3
BAR 504	Materials & construction IV	2	0	4	4
	TOTAL	**35**			**25**

SEMESTER – VI

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 6LI	Architectural Design - VI	0	0	16	8
	THEORY				
BAR 601	Building services IV	3	0	0	3
BAR 602	History of Architecture VI	3	0	0	3
BAR 603	Cost estimation	3	0	0	3
BAR 604	Human settlements & Planning	2	0	2	4
BAR 6E2	**ELECTIVES II**	3	0	0	3
	TOTAL	**35**			**24**

SEMESTER – VII

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
BAR 7LI	Architectural Design - VII	0	0	18	8
	THEORY				
BAR 701	Urban design	2	0	2	4
BAR 702	Research Methodology & Pre thesis work	2	0	2	4
BAR 703	Professional Ethics & Practice	3	0	0	3
BAR 704	Project Management	3	0	0	3
BAR 7E3	**ELECTIVE III**	3	0	0	3
	TOTAL	**35**			**25**

SEMESTER – VIII

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
	STUDIO				
	Thesis			32	18
	THEORY				
BAR 8E3	**ELECTIVES III**	3	0	0	3
	TOTAL	**35**			**21**

SEMESTER – IX

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
BAR 9SI	Dissertation initial stage				2
BAR 9VI	Practical Training - I				12
	TOTAL				**14**

SEMESTER – X

SUBJECT CODE	SUBJECT TITLE	L	T	P/S	CREDITS
BAR XSI	Dissertation report				2
BAR XV	Practical Training - II				12
	TOTAL				**14**

TOTAL CREDITS FOR THE PROGRAMME – 222

BAR 1LI **ARCHITECTURAL BASIC DESIGN** **L T P/S C**

0 0 14 6

OBJECTIVES:

- 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.
- 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.

COURSE OUTCOMES

- An understanding of the qualities of different elements as well as their composite fusions.
- An ability to engage and combine the elements of design in spontaneous as well as intentional ways in order to create desired qualities and effects.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

BASIC DESIGN 1

Introduction to architectural design – line – direction, shape, size, texture, value colour.

UNIT II

WORKSHOP Using of carpentry, masonry model making, space frame models, such as match sticks, straw, steel wire etc.

TOTAL: 75 PERIODS

Text Book:

1. Francis DK Ching – "Form space and order"
2. VS. Prammar – "Design fundamentals in architecture"

References:

1. Edward D. Mills – "Planning the Architects handbook, London 1985"
2. Paul Laseau , Graphic thinking for Architects and Designers, John Wiley & Sons, New York , 2001

BAR 101 THEORY OF ARCHITECTURE – I L T P/S C

3 0 0 3

OBJECTIVES :

- To introduce the various facets of architecture and its influencing factors.
- To introduce the formal vocabulary of architecture as one of the ways to experience the built environment.
- To understand and appreciate the universals of architectural form and space in terms of elements and principles within particular historical, cultural and geographic contexts.

COURSE OUTCOMES

- A thorough understanding on the definition of architecture; elements of architectures of form and space.
- An exposure to the principles of architecture and applications of the same in buildings.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5

CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		**Indirect**	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

APPLICATION OF COLOUR IN ARCHITECTURE

Effect of Colour in architecture – Colour symbolism.

UNIT II **10**

ORGANISATION OF FORMS AND SPACES

a) Spatial Relationship

i) Space within space

ii) Interlocking Spaces

iii) Adjacent spaces

iv) Space linked by a common space.

b) Spatial Organisation – influencing factors and their types

i) Centralised

ii) Linear

iii) Radial

iv) Clustered

v) Grid

c) Articulation of forms and spaces types

i) Edges and Corners

ii) Surface.

UNIT II **8**

CHARACTER AND STYLE IN BUILDING

Factors influencing the character and style of buildings. Study of examples from Buddhist, Hindu and Islamic Architecture in India – Greek, Roman, Gothic, Renaissance, Modem and Post Modern Movement.

UNIT IV **6**

PRINCIPLES OF COMPOSITION

Unity, Harmony and specific qualities of design to include Dominance, Punctuating Effect, Dramatic Effect, Fluidity, Climax, Accentuation and Contrast with building examples.

UNIT V **12**

CIRCULATION

Function of building circulation components of building circulation – The building approach, the building entrance, Configuration of the Path, path space relationship, from of circulation space with examples. Simple circulation diagram for buildings.

TOTAL: 45 PERIODS

Text Book:

1. Sir-Bannister Fletcher – "A History of Architecture", Butterworths, London, 1987.

2. Francis D.K. Ching, Architecture – "Forms, Space and Order", Van Nostrand Publications, New York, 1979.

3. Paul Alan Johnson - The Theory of Architecture - Concepts and Themes - Van Vostrand Reinhold Co – 1994

4. V.S. Pramar, Design Fundamental in Architecture - Somaiya Publications Pvt. Ltd. New Delhi,1973

References:

1. Ernest Burden – "Elements of Architectural Design" – A Visual resource, Van Nostrand Reinhold, 1994.

BAR 102 **HISTORY OF ARCHITECTURE – I** **L T P/S C**

3 0 0 3

OBJECTIVES:

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

COURSE OUTCOMES:

- A detailed understanding of Western (Christian) architecture.
- An understanding about the spatial and stylistic qualities associated with church architecture
- An idea about Chennai Christian Architecture with the help of assignments.

An Understanding of the architecture as an outcome of various social, political and economic upheavals, and as a response to the cultural and climate conditions

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

PREHIST AND EGYPT

Old stone age – the agricultural revolution – the new stone age – development of shelter – nature of art and architecture – out line of architectural character pyramid of Cheops – temple of Ammoon etc.,

UNIT II **8**

WEST ASIA

Sumerian, Babylonian and Persian cultures – architectural characters – Ziggurats – Palace of Sargoan – Palace at Persepolis

UNIT III **10**

GREECE

Evolution of city states – arts culture development – classical periods – architectural characters – orders in architecture examples Parthenon of Athens, Erecthion, Theatre etc.,

UNIT IV **6**

ROME

Republican States – factors influencing architecture – out line of architectural character – examples.

UNIT V **12**

EARLY CHRISTIAN AND BYZANTINE

British and spread of Christianity – church forms – out line of architectural character and various examples.

TOTAL: 45 PERIODS

Text Book:

1. Sir Banister Fletcher "A History of Architecture"

References:

1. Spiro Kostof – "A History of Architecture"
2. Pier Liugi Nervi – "History of World Architecture New York 1972"

BAR 103 **MECHANICS OF STRUCTURES I** **L T P/S C**

3 0 0 3

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 sectional properties (centroid, moment of inertia, section modulus and radius of gyration) for various sections by working out problems.

- To study the stress – strain behaviours 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 derive the relationship between elastic constants and solving problems.

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Apply the concepts of action of forces on a body and should be able to apply the equilibrium concepts.
- Analyze any type of determinate trusses with different end conditions.
- To solve the sectional properties for any geometrical shapes.
- The concepts of elastic constants and its applications for various types of problems with a thorough understanding of stresses and strain.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

FORCES AND STRUCTURAL SYSTEMS

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

UNIT II **8**

ANALYSIS OF PLANE TRUSSES

Introduction to determinate and indeterminate Plane trusses – Analysis of simple supported and cantilevered trusses by method of joints and method of sections.

UNIT III **10**

PROPERTIES OF SECTION

Centroid – Moment of Inertia – Section modulus – Radius of gyration – Theorem of perpendicular axis – Theorem of parallel axis.

UNIT IV **6**

ELASTIC PROPERTIES OF SOLIDS

Stress strain diagram for mild steel, High tensile steel and concrete – concept of axial and volumetric stresses and strains.

UNIT V **12**

ELASTIC CONSTANTS

Elastic constants – Relation between elastic constants – Application to problem

Text Book:

1. P.C. Punmia, “Strength of Materials and Theory of Structures”, Vol 1, Laxmi Publications, Delhi 1994.

2. S. Ramamurtham, “Strength of Materials”, Dhanpatrai & Sons, Delhi 1990.

References:

1. W.a. Nash, “Strength of Materials” – Schaums Series – McGraw Hill Book Company, 1989.

2. R.K. Bansal – “Engineering Mechanics and Strength of Materials” – Lakshmi Publications, Delhi 1990.

3. R.K. Rajput – “Strength of Materials’, S. Chand & Company Ltd., New Delhi 1996.

TOTAL: 45 PERIODS

TEXTBOOKS:

1. R.K.Bansal – A text book on Engineering Mechanics, Laxmi Publications, Delhi, 2005.

2. R.K.Bansal – A textbook on Strength of Materials, Lakshmi Publications, Delhi 2007.

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.

BMR 104 MATHEMATICS L T P/S C

3 0 0 3

OBJECTIVES

- Studying the properties of lines and planes in space, along with sphere and providing a tool to understand 3D material.
- Understand functions of more than one variable, along with differentiation under integral sign.
- Solving differential equation of certain type.
- Analyzing data collection and interpretation of results using statistical tools.

COURSE OUTCOMES

- The aim of the course is to develop the skills of the students in architectural drawing. The students will be trained on the basis of the topics of Mathematics necessary for effective understanding of architecture subjects. At the end of the course, the students would have an understanding of the appropriate role of the mathematical concepts learnt.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni

5	Quiz		
6	End Semester Examinations		

UNIT I **9**

PLANE AND LINES

Direction rations and cosines of a line – equations of a plane and intersecting planes – symmetric form of a straight line – angle between lines and planes – coplanar lines – skew lines – shortest distance.

UNIT II **8**

CURVED SURFACES 8

Equations of Sphere – section by a plane – tangent plane – standard equations of cone, cylinder and conoid – Properties.

UNIT III **10**

MATRICES

Characteristic equation, values and eigen vectors of a real matrix cayley – Trigonom Theorem without proof, reduction of a real symmetric matrix to diagonal from.

UNIT IV **6**

INTEGRATION

Integration of rational, trigonometric and irrational functions, properties of definite integrals, reduction formulae for trigonometric functions.

UNIT V **12**

ORDINARY DIFFERENTIAL EQUATIONS AND FUNCTIONS OF TWO VARIABLES

Linear second order and higher order different equations with constant co effienients. Differential equations with variable coefficients of Euler type. Partial differentiation, total derivative, approximations, Taylor's theorem with remainder Maxima and Minima envelope.

TOTAL: 45 PERIODS

Text Book:

1. B.S. Grewal, "Higher Engineering Mathematics", Khanna Publications, Delhi

2. P. Kandhaswamy, K. Thilagavathi, "Engineering Mathematics" Vol – I & II, S. Chandhan Publishers – 1998.

3. Narayan S. Manickavachagam Pillai T.K. Ramanaiah G – "Advanced Mathematics for Engineering Students" – Vol I & II S. Viswanathan Printers – 1993.

References :

1. V.Ramamurthy – Engineering Mathametics – Vol I & II, Amudha publications

BEN 105 ENGLISH L T P/S C

2 0 1 3

OBJECTIVES

To provide language training to the Architecture students which will be enable them to understand and acquire knowledge in technical & theory subjects.

COURSE OUTCOMES

To provide an adequate communication English Language training primarily - reading and writing skills, secondarily listening and speaking skills.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

LISTENING

Importance of listening, how listening plays a vital role listening comprehension - listening to audio cassettes – listening to interviews & group discussion and debate.

UNIT II **8**

SPEAKING

Defining things – Describing objects using adjectives – comparing – pronunciation practice – world stress – discourse markets – intonation – role play.

UNIT III **10**

READING

Detailed reading – interpreting tables, flow charts, tree diagram, pie diagram – understanding discourse coherence – guessing the meaning and training sentences (technical as well as general meaning) – vocabulary analysis.

UNIT IV **6**

WRITING

Sentence Patterns – SVO, SVOC, SVOCA…., recommendations and suggestions – preparing checklists, preparing an agenda to organize any program – formal and informal letters – preparing resume paragraph writing – note making and precise writing.

UNIT V **12**

LANGUAGES FOCUS

Parts of speech, prefixes & suffixes, degrees of comparison, prepositions, types of verbs, punctuation, error detection & correction synonyms and antonyms.

TOTAL: 45 PERIODS

Text Book:

1. "English for Engineers and technologist" Vil. I Orient Longman Ltd.

References:

1. Narayanasami, "Strength your writing"-Orient Longman revised edition.
2. Picket and laster, "Technical Writing" – New York Haper and Row publication.
3. Swan, Michel, "Basic English" – OUP
4. Technical communication – Principles – Meenakshi Raman & Sangeetha Sharma, Oxford University

BAR 106 ARCHITECTURAL GRAPHICS & ART STUDIO L T P/S C

0 0 6 3

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 sketching, painting ,sculptures.

- 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.

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

COURSE OUTCOMES

- An understanding on the concepts of architectural drawing as well as representation skills are imparted.
- An understanding on the building representation in 2D and 3D among students in addition to preparation of measured drawing.
- The students are exposed to various mediums and techniques.
- Bold enough to handle to the colours for the presentation sheets.
- The students are mastery in sketching and expression through forms.
- The skill and knowledge gained through the subject is most useful to their profession

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

GEOMETRICAL DRAWING: INTRODUCTION

Introduction to fundamentals of drawing/ drafting: Construction of lines, line value, line types, lettering, dimensioning, representation, format for presentation, etc.; Construction of angles, use of scales; Construction of circles, tangents, curves and conic sections.

Fundamentals of 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 outdoor 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 **8**

GEOMETRICAL DRAWING: PLANE & SOLID GEOMETRY

Construction and development of planar surface – square, rectangle, polygon etc Introduction of multi- view projection – projection of points, lines and planes.

Multi- view projection of solids – cube, prism, pyramids, cones, cylinders etc.; Sections of solids, true shape of solids.

UNIT III **10**

GEOMETRICAL DRAWING: AXONOMETRICPROJECTION & MEASURED DRAWING

Isometric, plan oblique and elevation oblique projection of planes, solids and combination of solid etc.

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, window, cornice, etc

UNIT IV **6**

PAINTING I & II

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.

Indoor and outdoor 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 V SCULPTURE **6**

Introduction of sculpture –Sculpture using various materials such as clay, plaster of Paris, paper

mache, and wire.

UNIT VI APPLIED ART **6**

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

TOTAL: 45 PERIODS

TEXTBOOKS:

1. IH. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004.
2. Francis D. K. Ching, Architectural Graphics, John – Wiley and Sons, 2009.
3. Fraser Reekie, Reekie's Architectural Drawing, Edward Arnold, 1995
4. Webb, Frank, "The Artist guide to Composition", David & Charles, U.K., 1994.
5. Drawing a Creative Process", Ching Francis, Van Nostrand Reinhold, New York, 1990.
6. Alan Swann, Graphic Design School, Harper Collins,1991.

REFERENCES:

1. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1978.

2. Moivahuntly, “The artist drawing book”, David & Charles, U.K., 1994.

3. Arundell (Jan) Exploring sculpture, Mills and Boon, London/Charles, T. Brand Ford Company, U.S.A.

4. The art of drawing trees, heads, colours, mixing, drawing, landscape and painting,water colour, oil colour, etc. – The Grumbacher Library Books, New York –1996.

5. Caldwell Peter, “Pen and Ink Sketching”, B.T. Bats ford Ltd., London, 1995.

BAR 2 LI ARCHITECTURAL DESIGN – II L T P/S C

0 0 11 6

OBJECTIVES:

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

COURSE OUTCOMES

- The students shall understand the basic functional aspect of designing simple building type and its relevant spatial organization
- The students shall be learn to reciprocate and sensitize the design/concept to the environment and the design skill of the project.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5

CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		**Indirect**	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

DESIGN STUDIO

The problems involve simple space organization starting with single space single use – small span Horizontal movement – single bay – passive energy type spaces. The study of space standards and an anthropometrics related to each problem is stressed upon. Anthropometry as related to physically handicapped and elderly persons is required to be studies.

Examples and exercises include

a) Toilet for a physically handicapped person, Hostel Room, Bedroom, Kitchen.

b) Shop, Workshop, Pavilions, Snack bar.

c) Residence, Petrol bunk, fire station, police station, cottage for an elderly couple.

UNIT II WORKSHOP

Elementary models including wall surfaces floral designs, ceilings, glass areas; law water, bodies etc., Block models of small campuses using wood, the ramacol mount broad, soap, soap, corkboard, etc., Detailed model of a small building like branch bank, small residence, bus shelter, snack bar, including landscape details.

TOTAL: 180 PERIODS

References:

Design Studio

1. “E and O.E Planning”, L life Book Ltd., London, 1973

2. De. Chiara and Callender, “Timer – saver standards for building types” McGrawHill Co., New York, 1973.

3. Sid Delk Mar Leach, “Techniques of Interior Design Rendering and Presentation”, McGraw Hill Co., New York, 1973.

Workshop II

1. Wenninger (Magrus. J) “Sperical Models”, Cambridge University Press, 1979.

2. Arundell (Jan), “Exploring Sculpture”, Mills and Boom, London/Charles T. Brandford Company, USSA, 1972.

3. John W. Mills, “The Technique of Sculpture”, B.T. Batsford Ltd., New York Reinhold Publishing Corpn., London, 1966.

4. Jannsen Constructional Drawing and Architectural models, KariKramer Verlag, Stuttgart

BAR 201 THEORY OF ARCHITECTURE II L T P/S C

3 0 0 3

OBJECTIVES:

- To introduce factors that lending meaning to architecture, expression, communication.
- To understand architecture as a product of historical context through introduction to aspects of style, character and architectural movements
- To understand the generation of individual meaning in architecture through study of philosophies/theories and exemplary works of architects
- To introduce thorough case studies, tools for representing, analyzing and interpreting architecture.
- To actually learn to represent, analyze and interpret the architectural experience holistically through live case studies

COURSE OUTCOMES

- An understanding the meaning of character and style of buildings with examples
- An exposure to students on ideologies and philosophies of architectures of contemporary architects through examples.
- An exposure to analysis and experience of architecture through case studies

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				

CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION

Developments during the industrial area, the great inventions and the reason for the birth of modern architecture.

UNIT II **8**

USE OF NEW MATERIALS

Extensive use of steel, glass and concrete – the great or the international exhibitions and their influence on architecture. The characteristic feature of modern architecture.

UNIT III **10**

CONTEMPORARY ARCHITECTS

The various moments, thoughts and philosophies of the 19th and 20th centuries to include Art Nouveau, Brutalism, Chicago school, constructivism, expressionism, Bauhaus, Functionalism, futurism, Neoclassicism, Organic architecture, Modular Co-ordination.

UNIT IV **12**

CONTEMPORARY ARCHITECTS

The three generations of architects : first generation to include L. Sullivan, F.L. Wright, Le Corbusier, Mies Van Der Rohe, Eric Mendelson. Walter Gropius, Richard Neutra. Second generation to include, Erro Sarrinen, Kenzo Tange, Louis Kahn, Minoru Yamasaki, Hugh Stubbins, Paul Rudolph, Skidmore Owings and Merrill.

UNIT V **6**

LATER TREND

Developments of prefabrication techniques, futuristic thoughts of Buck Minister Fuller.

TOTAL: 45 PERIODS

References:

1. Peter Collins, “Changing ideals in Modern Architecture”, Faber and Faber, London, 1985.

2. Bill Rise Bero, “Modern Architecture and Design”.

3. Kenneth Frampton, “Modern Architecture – A critical history” – Oxford University Press, 1980.

4. William J. Christ “Modern architecture since 1900”, Paidon Press Ltd., Oxford, 1982.

BAR 202 HISTORY OF ARCHITECTURE – II L T P/S C

1 0 2 3

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.

COURSE OUTCOMES

- The students understood Indian architecture as a response to the political and socio cultural conditions present in india at different points of time.
- The architectural responses were understood with respect to technology style and character

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct	Indirect

1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

ANCINET INDIA

Indus valley civilization – Culture and pattern of settlement. Impact of Aryan Culture – Vedic Village and the rudimentary forms of bamboo and wood wooden construction under the Mauryan Rule.

UNIT II **8**

BUDDHIST ARCHITECTURE

Hinayana and Mahayana Buddhism – Interaction of Hellenic & Indian ideas in Northern India – Architectural Production During Ashoka's Rule – Ashokan Pillar, Sarnath, Rock cut caves at Barabar, Sanchi Stupa, Salient features of a Chaitya hall and Vihara, Rock cut architecture in the Western and Eastern Ghats – Karli, Viharas at Nasik, Rani Gumpha, Udaigiri, Takti Bhai, Gandhara.

UNIT III **10**

HINDU ARCHITECTURE

Evolution of Hindu Temple – Early shrines of the Gupta and Chalukya periods – Tigawa Temple, Ladh Khan and Durga Temple, Aihole, Papanatha and Virupaksha Temples, Pattadakal.

UNIT IV **12**

DRAVIDIAN ARCHITECTURE

Dravidian culture – Rock cut products under Pallavas – Shore Temple, Mahabalipuram – Dravidian Order – Brihadeeswara Temple, Tanjore – Evolution and Form of Gopuram – Complexity in temple plan due to complexity in Ritual – Minakshi Temple, Madurai.

UNIT V **6**

INDO ARYAN STYLE

Salient Features of an Indo Aryan Temple – Lingaraja Temple, Bhuvaneswar – Sun Temple, Konarak, Kunds and Vavs – Sabali Kund – Adalaj – Surya Kund, Modhera.

TOTAL: 45 PERIODS

Test Book:

1. Percy Brown, “Indian Architecture (Buddhist and Hindu period)”, Taraporevalla and sons, Bombay, 1983.

2. Satish Grover, “The Architecture of India (Buddhist and Hindu period)”, Vikas Publishing Housing.

References:

1. Christoper Tadgelli, The History of Architecture in India From the Dawn of civilization to the end of Raj, Longman Group, U.K. Ltd., London, 1990.

BAR 203 MECHANICS OF STRUCTURES – II L T P/S C

3 0 0 3

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.
- Case studies and Models wherever feasible.

COURSE OUTCOMES

At the end of the course, the student should be able to:

- Apply the concepts of determining the techniques of finding the stresses.
- Use the theory of simple bending theory to find the deflection in beams.
- Analyze and solve the different types of columns.

  Analyze the different types of indeterminate beams.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

SHEAR FORCE AND BENDING MOMENT

Concept of sharing forces and Bending Moments – shear force and bending Moment diagrams for cantilver and simply supported beams subjected to point load, uniformly distributed loads and their combinations.

UNIT II **8**

STRESSES IN BEAMS

Theory of simple blending stresses in beams, share stresses in beams – examples on simple sections. Stress distribution diagrams.

UNIT III **10**

DEFLECTION OF BEAMS

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

UNIT IV **12**

THEORY OF COLUMNS

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

UNIT V **6**

INTRODUCTION INDETERMINATE STRUCTURES

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

TOTAL: 45 PERIODS

Text Books:

1. M.M. Ratwani, & V.N. Vazirani, "Analysis of Structures, Vol. I" Khanna Publishers – Delhi, 1987.

2. A.R. Jain and B.K. Jain, "Theory and Analysis of Structures, Vol I" Nemchand and Bros,

Roorkeee, 1987.

3. B.C. Punmia, 'Strength of Materials and Theory of Structures" Vol I Laxmi publications New Delhi, 1994.

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

References:

1. Timoshenko, S.P. and D.H. Young, "Elements of Strength of Materials" Fifth Editions, East West Press, 1983.

BAR 204 PERSONALITY DEVELOPMENT, SOFT SKILLS ENHANCEMENT

L T P/S C

3 0 0 3

OBJECTIVES

The objective of the training programme is bring about personality development with regard to the different behavioral dimensions that have far reaching significance in the direction of organizational effectiveness.

COURSE OUTCOMES

The students has to build confidence and inculcate various soft skills and to help Students to identify and achieve their personal potential

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

Unit 1 **9**

Leadership Introduction to Leadership, Leadership Power, Leadership Styles, Leadership in Administration.

Unit 2 **8**

Interpersonal skills – Conversation, Feedback, Feed forward

Interpersonal skills – Delegation, Humor, Trust, Expectations, Values, Status,

Unit 3 **5**

Communication Introduction to Communication, Flow of Communication, Listening, Barriers of Communication, How to overcome barriers of communication.

Unit 4 **6**

Stress Introduction to Stress, Causes of Stress, Impact Management Stress, Managing Stress

Unit 5 **6**

Group Dynamics Importance of groups in organization, and Team Interactions in group, Group Building Decision Taking, Team Building, Interaction with the Team, How to build a good team?

Unit 6 **5**

Time Time as a Resource, Identify Important Time Management Wasters, Individual Time Management Styles, Techniques for better Time Management.

Unit 7 **5**

Motivation Introduction to Motivation, Relevance and types of Motivation, Motivating the subordinates, Analysis of Motivation

TOTAL: 45 PERIODS

BAR 205 ARCHITECTURAL GRAPHICS – II **L T P/S C**

0 0 6 3

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.

COURSE OUTCOMES

- The techniques and skills gained learned through this subject Architectural drawing II is very useful to their profession
- Able to construct the perspective drawings of the buildings and 3d views as well the documentation of buildings through drawings

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **15**

PERSPECTIVE

Characteristic of Perspective Drawings, Perspective Systems and methods. Two point perspective of simple objects, outdoor and indoor view of building etc.

UNIT II **15**

ONE POINT AND TWO POINT PERSPECTIVE

One and two point perspective of interiors, Perspective theory and practice.

UNIT III **15**

SCIOGRAPHY

Principles of shade and shadows – of lines and Circles, shadows of Architectural elements, etc., Shadows of circular solids, shadows on buildings.

TOTAL:45 PERIODS

Text Book:

I Perspective:

1. Robert W. Gill, “Basic Perspective”, Thames and Hudson, London, 1974.

2. Interiors: “Perspective in Architectural Design Graphic” – SMA Publishing Co., Ltd., Japan, 1967.

II Sciography :

1. C. Leslie Martin, “Architectural Graphics”, The Macmillan Company, New York, 1964.

2. Francis Ching, “Architectural Graphics”, Van Nostrand and Reinhold Company, New York, 1975.

3. Ernest Norling, “Perspective Drawing”, Walter Foster Art Books, California, 1986.

4. Bernard Alkins – 147, “Architectural Rendering”, Walter Foster Art Books, 1986.

BAR 206 Materials and Construction I L T P/S C

2 0 4 4

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.

COURSE OUTCOMES

Students learn about making of the building using mind, Bamboo, Straw bale, stone through drawing as well as doing a literature or live case study. It is required that students submit a case study example to understand materials used in the building, method of construction etc. After this stage students are requested to submit drawing plates constructing of plan, Elevation and section along with sketches and details showing method of construction.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	

CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

1 INTRODUCTION **15**

Functional requirements of a building and its components - Drawings of foundations, plinth superstructure, roofings. Soils - Formation - grainsize distribution - soil classification systems. Lime - fat/hydraulic limes - Their uses and properties - Manufacturing process -Mortar, functions - requirements - mix proportions.

2.RURAL-MATERIALANDCONSTRUCTION **20**

Mud as a building material - Soil stabilisation, soil blocks-Drawings of foundations - types, S.S. Block - S.S.Castinsitu walls - flooring - roofing - plastering. Bamboo, casuarina coconut, palam, hay coir,jute-properties-uses-fire retardent treatment insection proofing. Types of foundations - walls - simple rooftrusses, floors for rural structures.

3 STONE **25**

Classification of rocks - Building stones - their uses - physical properties - brief study of tests for stone - deterioration - preservation of stone - various stone finishes - cutting and polishing of granites. Drawings of foundations - types of masonry - random rubble/Ashlar, etc.-cavity walls - flooring copings, sills, lintels,corbels, arches.

4.BRICKS AND CLAY PRODUCTS **15**

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

TOTAL: 45 PERIODS

TEXTBOOKS:

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

WEBSITES :

http://www.baboo-Flooring.com

http:// ag.avizona.edu/SWES

http://www/angelfite.com/in

http://www.idrc.ca/libary/documents/104800/chapz-e.html

http://www/angelfite.com/inz/granite

III SEMESTER

BAR 3LI	**ARCHITECTURAL DESIGN – III**	**L T P/S C**
		0 0 13 6

OBJECTIVES:

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

- 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.

COURSE OUTCOMES:

The characteristics of site, importance of site planning and built form/open space relationship has been understood. User group responses were ascertained through case-studies. Presentation of concepts was enabled through 2D drawings, sketches of model.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

DESIGN STUDIO **120**

Single level planning in small scale, small span, horizontal movement and simple vertical movement, data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for physically handicapped persons – Concepts and presentation of design with scales models – Examples : Residential buildings, Institutional buildings, banks, Nursery or Primary schools, Primary Health Centre, School for children with learning disabilities, neighbourhood market, etc.

UNIT II

COMPUTER LAB STUDIO

Introduction to computer aided drafting system, concepts of real dimension, colours, symbols repeatability modification, layers, exercises related to design projects above.

TOTAL:210 PERIODS

References:

1. De Chiara and Callender, “Time Saver Standards Building Types”, McGraw Hill Co., 2nd Editions, 1980.
2. Edward D. Mills, Planning-“the Architects Handbook” – 10th Edition, British Library C Taloguing in Publishing Data, 1985.
3. Wakita / Linde, “The Professional practice of Architectural working, drawing” Jonh Wiley & Sons, 1984.
4. Andrew Alpern, “Handbook of specialty Elements in Architecture”, McGraw Hill Book Co., 1982.
5. Julius Panero & Martin Zelnik, “Human Dimension and Interior Space”, Whitney Library of Design Publication, 1979.
6. “Neufert Architect’s Data”, Rudolf Hefg, Crosby Lockwood and Sons Ltd., 1970.

BAR 301 BUILDING SERVICES I L T P/S C

3 0 0 3

OBJECTIVES:

- To Study Water supply, treatments, distribution and plumbing system for all type of buildings.
- To Study Waste water treatments, Sewer lines for all types of buildings.
- To Study Drainage system for a Small Campus and a Residential neighbourhood.
- To understand Refuse collections, disposal, composting, Landfill, Bio gas for a Town and City.
- Applications of all the above systems to a Buildings, Small Campus and a Residential neighbourhood.

COURSE OUTCOMES

- Students have through understanding of how water and waste water are managed, in residential unit, small campus and for a large city.
- Students are aware of the principles and best practices for Solid waste management in residential unit, small campus and for a large city.

CO/PO Mapping
S – Strong, M – Medium, W – Weak

COs

	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

CONTENT:

UNIT I WATER QUALITY, TREATMENTS AND DISTRIBUTION 9

Sources of water supply – Water Quality - Water requirements for all type of residential, commercial, Industrial buildings and for town – Water treatment methods – Screening, aeration,

Sedimentation, Filtration, Disinfection, Softening, conveyance of water – Distribution of water –

Choice of pipe materials - Types of fixtures and fittings – System of plumbing in all type of buildings.

UNIT II WASTE WATER, TREATMENTS AND DISPOSAL 8

Waste water – Sewage disposal, primary treatment. Secondary treatment, Biological treatment and

Modern types of Sewage Treatment Plants - Sewer line fixtures and traps, Manholes, Septic tank.

UNIT III STORM WATER DRAINAGE AND RAIN WATER HARVESTING 10

Basic principles of storm water drainage – drain pipes and type of pipe – storm water gutter – rain water harvesting principles – storage sumps

UNIT IV SOLID WASTE, COLLECTIONS, TREATMENTS, DISPOSAL, MODERN

DRAINAGE SYSTEMS **12**

Refuse collection, disposal, Incinerator, Composting, Vermicomposting, Sanitary Land filling, Bio gas system and Modern renewable energy system. Modern plumbing system, drainage collection system, disposal for a housing colony, small towns – Selection of pumps and Construction of pump rooms.

UNIT V APPLICATION OF THE ABOVE UNITS **6**

Layout design and details of water supply distribution system in a Campus or Small residential neighbourhood - Layout design and details of sewage and drainage system for different types of buildings - water supply pipe lines, storm water drainage pipe lines and Rain water Harvesting for small residential neighbourhood.

TOTAL: 45 PERIODS

TEXTBOOK:

1. Manual of water supply and treatment, Second edition, CPHEEO, Ministry of works and housing, New Delhi 1977

2. AFEWise, JASwaffiedWater, Sanitary &Waste Services in buildings –Mitchell Publishing Co. Ltd. – 2002, V Edition

3. Punmia B.C., Waste Water Engineering, Laxmi Publications, 2009.

4. Arceivala S.J., Waste Water Treatment for Pollution Control, Tata McGraw Hill, 2008.

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. Renewable energy, basics and technology, supplement volume on integrated energy systems) Auroville, 1998 Sri Aurobindo Ashram, Pondicherry 605002 India

BAR 302 HISTORY OF ARCHITECTURE – III **L T P/S C**

3 0 0 3

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.

COURSE OUTCOMES

- A detailed understanding of Western (Christian) architecture.
- An understanding about the spatial and stylistic qualities associated with church architecture
- An Understanding of the architecture as an outcome of various social, political and economic upheavals, and as a response to the cultural and climate conditions.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

ROMANESQUE

The medieval ages – learning in the monasteries, evolution of the guilds – Factors influencing architecture – outline of architectural character in Italy, France and England – Examples: Pisa group, Italy; Abbey Aux Hommes, Caen; Tower of London.

UNIT II **8**

FRENCH GOTHIC

Religious and social influence – evolution of vaulting and development of structural systems – outline of Architectural character – Examples: Notre Dame, Paris.

UNIT III **10**

ENGLISH AND ITALIAN GOTHIC

Development of English gothic vaulting – outline of architectural character in England and Italy – Examples: West Minister Abbey, Hampton Court Palace, London: Doges Palace, Venice: Milan Cathedral.

UNIT IV **12**

ITALIAN RENAISSANCE

The Idea of rebirth and revival of art – sociological influences in art architecture – Development of thought, emergence of merchant communities and their patronage. Outline of the Architecture during the Early Renaissance. High Renaissance and Baroque Periods – Features of a typical Renaissance Place, example: Palazzo Ricardi, Study of life History, Philosophy, contribution of the following architects: Brunelleschi, Michael Angelo, and Andrea Palladio.

UNIT V **6**

FRENCH & ENGLISH RENAISSANCE

Outline of the architectural character of French and English Renaissance – Domestic Architecture in England – Study of the life, Philosophy and works of the following architecture: Sir Christopher Wren. Indigo Jones.

TOTAL: 45 PERIODS

Text Books:

1. Sir Bannister Fletcher, “A History of Architecture”, University of London, The Antholone Press. 1986.

2. G.K.Hiraskar, Great Ages of World Architecture ,Dhanpat Rai and Sons,Delhi

References:

1. Pier Luigi Nervi, “History of World Architecture Series”. Harry N. Abrame Inc. Publication, New York, 1972.

2. S. Lloyd/H.W. Muller, “History of World Architecture” – Series Faber Ltd., London, 1986.

3. Spiro Kostof, “A History of Architecture” – Settings and Rituals, Oxford University Press,

London, 1985.

BAR 303 DESIGN OF STRUCTURES I L T P/S C

3 0 0 3

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.
- Case studies and models wherever applicable

COURSE OUTCOMES

At the end of the course, the student should be able to:

- Design the timber beams and columns by applying the codal provisions. Able to design the steel joints for maximum efficiency and strength.
- Tension members and compression members are designed for various conditions by applying the codal provisions.
- Different types of laterally unsupported & supported beams to be designed for various conditions.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni

5	Quiz		
6	End Semester Examinations		

UNIT I TIMBER STRUCTURES - DESIGN OF BEAMS AND COLUMNS 9

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

UNIT II STEEL STRUCTURES - BOLTED AND WELDED JOINTS 12

Assumptions – failure of Bolted joints – Strength and Efficiency of Bolted Joints – Types – Design of Bolted 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 6

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

TOTAL: 45 PERIODS

TEXTBOOK:

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.

3. Ramamurutham .S, Narayanan .R, Design of Steel Structures, Dhanpat Rai – Sons, 2006.

4. Punmia B.C., Design of Steel Structures, Laxmi Publications, 2005.

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 - 2007 – Code of Practice for use of Structural Steel in General Building Construction

BAR 304 CLIMATE AND ENVIRONMENTAL STUDIES L T P/S C

3 0 0 3

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.

COURSE OUTCOMES

- Understanding of Thermal balance in Human beings
- Designing Climate responsive structure
- Conceptual understanding of Air flow in Buildings

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I CLIMATE AND HUMAN COMFORT **9**

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 **10**

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 – Types of envelops with focus on glass.

UNIT IV AIR MOVEMENT DUE TO NATURAL AND BUILT FORMS **12**

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 **6**

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

TOTAL: 45 PERIODS

TEXTBOOKS:

1. O.H. Koenigsberger and Others, Manual of Tropical Housing and Building – Part I - Climate design, Orient Longman, Madras, India, 2010.

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 – 110 002.

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.

BAR 305 COMPUTER STUDIO – I L T P/S C

0 0 4 3

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.

COURSE OUTCOMES

The students benefit by learning software which helps them to better visualize complicated forms and also helps in producing photo realistic images of those 3D forms

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

INTRODUCTION TO COMPUTER **15**

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.,

UNIT II **15**

INTRODUCTION TO COMPUTER AIDED 2D DRAFTING

Understanding the use of drawing tools, object editing, drawing objects, filling and setting drawing units, scales, limits that size and dimensioning, text, Setting up of drawings of various simple architecture objects with complete text and dimensioning.

UNIT III **15**

ADVANCE COMPUTER AIDED 2D DRAFTING

Advance command programming – transparent overlays hatching utilities, assigned colour and line type, use of multiline, style, block, symbol library manipulation for accurate drawings, incorporating the above said utilities.

UNIT IV **15**

INTRODUCTION TO 3D DRAFTING

Introduction to 3D modeling technique and construction planes, drawing object 3D surface setting up elevation and thickness, and use of dynamic projections.

UNIT V **15**

3D MODELLING

Solid modeling with primitive commands and Boolean Operation. Use of region modeling in solid modification in solid modification.

TOTAL: 75 PERIODS

Text Book:

1. V. Rajaraman, “Principles of Computer Programming” – Prentice Hall of India.

References:

1. “Auto CAD reference manual” – Auto Desk Inc.
2. “Auto CAD Architectural users’ guide” – Auto Desk Inc.

BAR 306 MATERIALS AND CONSTRUCTION II **L T P/S C**

2 0 4 4

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 manmade timber products such as ply wood.
- To understand the quality assurance measures and testing procedures related to material, workmanship and performance for the topics discussed.

COURSE OUTCOMES

- An Understanding of Brick and clay products and timber in methods of construction and in detailing.
- An Understanding of Testing Procedures, Quality assurance and workmen ship is imparted.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

1 BRICKS AND CLAY PRODUCTS 15

Drawings of brick foundations - buildings in brickwork, bonds columns,corners - structrual members in brickwork. Reinforced brick masonry - Arches - Lintels - Corbels - copings.

Hollow clay blocks - for walls - patritions -roofs. Roofings - Flats Roofs - or Terrace roofs - Sloping roofs. Detailing includes for physically handicapped.

2 TIMBER AND ALLIED PRODUCTS 15

Softwood and Hardwood - Secondary Timber - Physical properties and uses - Defects, Conversion, Seasoning, Decay and preservation of timber - Fire retardent treatment, anti-termite treatment. Industrial timbers - plywood,blockboard,particle board, fibre boards. Manufacture and uses - current developments.

3TIMBER 15

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

4 LOW COST BUILDING TECHNOLOGY 15

Drawings of foundations - walling - Roofs - Partitions - Ceiling panel - Doors and Windows. Miscellaneous - Drawing of Brick Jails, Screen Walls - Pavement blocks - Ferrocement water tanks. Detailing and specifications for physically handicapped.

5 GLASS 15

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

TOTAL: 45 PERIODS

TEXTBOOKS:

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

WEBSITES

http://www.ibex-ibex-intl.com

http://www.inika.com/chitra

http://www.routbdge.com

http://www.ventura india.com

BAR 4LI ARCHITECTURAL DESIGN IV L T P/S C

0 0 13 6

OBJECTIVES:

- 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.
- 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 emphasis 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.

COURSE OUTCOMES

- Students ability to understand the concept of community and settlement evolution and the built environment as influenced by Socio-economic, Cultural, Environmental and Technical factors.
- Ability to provide a sensitive approach to the design of the built environment taking into account the above mentioned factors

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

DESIGN STUDIO

Problem related to multi room, single use, small span – Multiple story, Horizontal and vertical movement, Active cum passive energy, Masonry and frame type buildings.

Ex: Department store, Library, higher secondary school, campus students' center, etc. The projects will consciously provide for movement and use by the physically handicapped and elderly.

UNIT II

DESIGN STUDIO – RURAL PROJECT

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

UNIT III

COMPUTER LAB STUDIO

Documentation of rural project of Housing typology using computer – Introduction to 3D modeling and rendering 3D images.

TOTAL: 180 PERIODS

References:

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

BAR 401 BUILDING SERVICES II L T P/S C

3 0 0 3

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

COURSE OUTCOMES

- The students understand the basics of Electricity and wiring system
- The students are exposed to Fundamentals of Lighting and Lighting design
- An Understanding of Vertical transportation system in a building

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

PUMPS AND MACHINERIES

Reciprocating, centrifugal, deep well, submersible automatic pumps, sewerage pump, compressors vacuum pump – their selection installation and maintenance – Hot Water Boiler –Lifts and Escalators – special features required for physically handicapped and elderly – Conveyors – Vibrators – Concrete mixers – DC / AC motors – generators – Laboratory services – gas, water, air and Electricity.

UNIT II **8**

ELECTRICAL SYSTEMS

Basics of electricity – single / three phase supply – Protective devices in electrical installations – Earthing for safety – Types of earthing – ISI Specification.

UNIT III **10**

ELECTRICAL INSTALLATIONS IN BUILDINGS Type of wiring systems and their choice – Planning electrical wiring for building – Main and distribution boards – transformers and switch gears – Layout of substations.

UNIT IV **12**

PRINCIPLES OF ILLUMINATION

Visual Tasks – factors affecting visual tasks – Modern theory of light and colour – Synthesis of light – additive and subtractive synthesis of colour – luminous flux – Candela – Solid angle illumination – Utilisation factor – depreciation factor – MSCP – MHCP – Lans of illumination.

UNIT V **6**

LIGHT DESIGN

Classification of lighting – Artificial light sources – spectral energy distribution – luminous efficiency – colour temperature – colour rendering. Design of modern lighting for stores, offices, schools, hospitals and house lighting. Elementary idea of special features required and

minimum level of illumination requited for physically handicapped and elderly in building types.

TOTAL: 45 PERIODS

Text Books:

1. "Handbook for Building Engineering in Metric systems", NBC, New Delhi, 1968.

References:

1. E.R. Ambrose, "Hear Pumps and electric heating", John and Wiley and Sons, Inc., New York, 1968.
2. "Philips Lighting in Architectural Design", McGraw Hill, New York, 1964.
3. R.G. Hopkinson and J.D. Kay, "The Lighting of buildings", Faber and Faber, London, 1969.

BAR 402 HISTORY OF ARCHITECTURE IV L T P/S C

3 0 0 3

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.

COURSE OUTCOMES

- Various criticisms against modernism
- The conditions associated with post modernity in terms of cultural, political conditions etc.
- An understanding of various postmodern directions in architecture
- Architectural responses as reactions to changing cultural paradigms
- An understanding of post independent Indian architecture

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				

CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION TO ISLAMIC ARCHITECTURE

Brief History of Islam in terms of birth, spread across countries and principles – Influences on Islamic Architecture – Evolution of building types in terms of forms and functions – the mosque, the tomb, and minaret, the madarasa, the palace, the caravanserai, vernacular architecture, the market – important principles, elements and character of Islamic architecture in terms of structure materials and methods of construction, elements of decoration, colour, geometry, light – important examples to illustrate development of Islamic architecture.

UNIT II **8**

ISLAMIC ARCHITECTURE IN INDIA

Advent of Islam into the Indian subcontinent and its impact – source of Islamic Architecture in India and influences on them – Brief history of development and classification urban different styles and regions.

UNIT II **10**

DELHI OR IMPERIAL STYLE

Development of architectural styles during the rule of the slave, Khilji, Tulip Spayed and Lodi Dynasties – important examples for each period.

UNIT IV **12**

PROVINCIAL STYLE

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

UNIT V **6**

MUGHAL STYLE

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

TOTAL: 45 PERIODS

Text Books:

1. Brown Percy, "Indian Architecture (Islamic Period)" Taraporevalla and Sons, Bombay, 1983.
2. Satish Grover .The Architecture of India(Islamic) Vikas Publishing House Pvt Ltd. New Delhi

References:

1. "Architecture of the Islamic World" – George Michell – its history and social meaning, Thames and Hudson, London, 1978.
2. "Islamic Architecture, Form, Function and Meaning", Robert Hillenbrand, Edinburgh University Press, 1994.
3. Christopher Tadgell – "The History of Architecture in India" – Penguin Books (India) Ltd., New Delhi, 1990.
4. Satish Grover, "The Architecture of India (Islamic)" Vikas Publishing House Pvt. Ltd., elk New Delhi, 1981.
5. R. Nath – "History of Mughal Architecture" – Abhinav Publications – New Delhi – 1985.

BAR 403 DESIGN OF STRUCTURES II L T P/S C

3 0 0 3

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.
- Case studies and models wherever applicable.

COURSE OUTCOMES

At the end of the course, the student should be able to:

- Understand the different concepts of WSM and LSD methods using the codal provisions.

- RC beams and slabs to be designed by applying the above concepts.
- Dog legged staircase design using LSD.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

DESIGN OF CONCRETE MEMBERS AND WORKING STRESS

DESIGN OF BEAMS

Concept of Elastic method, Ultimate Load Method and Limit State Method – Advantages of Limit State Method over other methods. Analysis and Design of Singly and Doubly reinforced rectangular and flanged beams for bending.

UNIT II **8**

LIMIT STATE DESIGN OF BEAMS

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

UNIT III **10**

LIMIT STATE DESIGN OF SLABS

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

UNIT IV **12**

DESIGN OF CIRCULAR SLABS

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

UNIT V **6**

DESIGN OF STAIRCASE BY LIMIT STATE METHOD

Types of Staircases – Design of Dog Legged Staircase.

TOTAL: 45 PERIODS

TEXTBOOK:

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, 2004.

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.

BAR 404 SITE PLANNING & LANDSCAPE ARCHITECTURE L T P/S C

0 0 4 3

OBJECTIVES:

- To teach the importance of site and its content in architectural creations
- To orient the students towards several influencing factors which govern the siting of a building or group of buildings in a given site.
- To teach various techniques of site analysis through exercises and case studies.
- To teach the students the methodology of preparing a site analysis diagram. This will

serve as a prelude to any architectural creation through exercises.

COURSE OUTCOMES

- The contextual importance on site analysis can be understood based on the various site factor with respect to the study area.
- A first hand understanding of site drawings for Landscape Architecture and Urban design is studied.
- Various scientific and analytic site analysis techniques is understood.
- A methodological approach for preparation of master plans for small scale and large scale projects can be understood.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION

Definition of plot, site, land and region, units of measurements. Introduction to survey, methods of

surveying, where they are used, Surveying Instruments and their application. Need for surveying.

Measuring and drawing out a site plan from the measurements

UNITII **8**

SITE DRAWINGS

Computation of area by geometrical figures and other methods. Drawing marking out plan, layout

plan and centerline plan – Importance, procedure for making these drawings and dimensioning.

Setting out the building plan on site – Procedure and Precautions. Exercises on the above.

UNITIII **12**

SITE ANALYSIS

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. Study of microclimate:- vegetation, landforms and water as modifiers of microclimate. Study of land form;- contours, slope analysis, grading process, grading criteria, functional and aesthetic considerations – Case

studies and exercises on the above.

UNITIV **10**

SITE CONTEXT

Context of the site. Introduction to existing master plans land use for cities, development control

Rules. Preparation of maps of matrix analysis & composite analysis. Site selection criteria for housing development, commercial and institutional projects - Case studies.

UNIT V **6**

SITE PLANNING AND SITE LAYOUT PRINCIPLES

Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks,

road widths and parking, regulations. Turning radii & street intersections

TOTAL: 45 PERIODS

TEXTBOOK:

1. Kevin Lynch - Site planning - MIT Press, Cambridge, MA - 1984.

2. Edward. T. Q. Site Analysis – Architectural Media, 1983

REFERENCES:

1. B.C.Punmia - Surveying Vol.I - Standard Book House, New Delhi - 1983.

2. P.B.Shahani - Text of surveying Vol.I, Oxford and IBH Publishing Co – 1980

3. Joseph De.Chiarra and Lee Coppleman - Urban Planning Design Criteria – Van Nostrand Reinhold Co., 1982

4. Storm Steven, Site engineering for landscape Architects, John wiley & Sons Ine, 2004.

5. Development Control Rules – CMDA, 2008.

BAR 405 CLIMATE & BUILT ENVIRONMENT L T P/S C

3 0 0 3

OBJECTIVES:

- At the end of this course the student is expected to understand what constitutes the environment, what are precious resources in the environment, how to conserve these resources, what is the role of a human being in maintaining a clean environment and useful environment for the future generations and how to maintain ecological balance and preserve bio-diversity. The role of government and non-government organization in environment managements.

COURSE OUTCOMES

1. Students are sensitized on the need for natural resource management, and sustainable lifestyles

2. Students appreciate the value of ecosystem and the need and methods for conserving the same.

3. Students understand the how pollution and hazards can be mitigated.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

UNIT I **9**

INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES

Definition, scope and importance of environment – need for public awareness - Forest resources:

Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems

– Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity,case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource,land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill /mountain.

UNIT II **8**

ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

Concept of an ecosystem – structure and function of an ecosystem – producers, 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 (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic,species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hotspots 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.

Field study of common plants, insects, birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT III **10**

ENVIRONMENTAL POLLUTION

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 hazards – soil waste management: causes, effects and control measures of municipal solid

wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods,earthquake, cyclone and landslides.

Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT IV **12**

SOCIAL ISSUES AND THE ENVIRONMENT

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.

– wasteland reclamation – consumerism and waste products – environment production act – Air (Prevention and Control of Pollution) act – Water (Prevention and control of Pollution) act – Wildlife protection act – Forest conservation act – enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V **6**

HUMAN POPULATION AND THE ENVIRONMENT

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.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Gilbert M.Masters, “Introduction to Environmental Engineering and Science”, 2nd edition, Pearson Education, 2004.

2. Erach Bharucha, “Text book of Environmental Studies”, University Press, Hyderabad, 2006.

3. Anubha Kaushik and Kaushik C.P., “ Perspectives in Environmental Studies” New age International (P) Ltd., New Delhi, 2005

4. Venugopala Rao.P, “ Principles of Environmental Science and Engineering” Prentice Hall of

India Pvt. Ltd., New Delhi, 2006.

REFERENCES:

1. Cunningham, W.P. Cooper, T.H. Gorhani, “Environmental Encyclopedia”, Jaico Publ., House, Mumbai, 2001.

2. Dharmendra S. Sengar, “Environmental law”, Prentice hall of India PVT LTD, New Delhi,2007

3. Rajagopalan, R, “Environmental Studies-From Crisis to Cure”, Oxford University Press,2005

4. Richard T. Wright, “Environmental Science” Prentice Hall of India Pvt. Ltd., New Delhi, 2007

BAR 406 Materials and Construction – III L T P/S C

2 0 4 4

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.

COURSE OUTCOMES

This subject helps the students to understand the properties characteristics. Strength, manufacturing process of various construction materials. Which in turn help them to choose the
suitable materials according to the contact – In response to the surroundings.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

1 CEMENT **10**

Varities of cement,compostion,properties and uses - brief study on manufacture of portland cement - tests for cement - mortar for various works.

2 CONCRETE,ITS INGREDIENTS MANUFACTURE & PROPERTIES **15**

Ingredients - suitability requirementsd for aggregates, grading of aggregates - role of water in concrete - reinforcement - admixtures - properties of concrete. Manufacture of concrete and concreting - mix proportioning - batching, mixing, transporting, placing, compaction, curing formwork - quality control - outline of tests for concrete - joints in concrete - concrete finishes.

3 SPECIAL CONCRETE AND CONCRETING METHODS **15**

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

4 .CONCRETE CONSTRUCTION **15**

Introduction to frames structures.

Concrete in foundations - types of footings - isolated, combines, continious,strip. Concrete floors, walls and partitions. Concrete Lintels, arches, sunshades Concrete slabs - types - concrete beams and columns.

5 CONCRETE STAIRCASES **20**

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

TOTAL: 45 PERIODS

TEXTBOOKS:

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. Dr.B.C.Punmia, Building Construction, Laxmi Publications Pvt.Ltd., New Delhi, 1993.
4. Arthur Lyons - Meterials for Architects and Builders - An introduction Arnold, London,1997.
5. Don A.Watson, Construction Materials and Process, McGraw Hill Co.,1972.
6. Jack M.Launders, Construction Materials and Methods Careers, South Holland, Illinois, Wilcox Co.Ltd.,1986.
7. Francis D.K.Ching, Building Construction Illustrated VNR.1975.
8. Alan Banc, Stairs, Steps and Ramps, Butterworth Heinemann Ltd.,1996.
9.

WEBSITES:

http://dir.yahoo.com/Business-and - Economy/companies/construction/concrete/materials

http://www.easyads.co.2a/yellow/india/construct

http://www.concrete.t.v-tokyo.ac.ip

www.larsentoubro.com

www.dalmiacement.com

BAR 5 LI **ARCHITECTURAL DESIGN V** **L T P/S C**

0 0 13 6

OBJECTIVES:

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

- 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 emphasis 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.

COURSE OUTCOMES

- Understanding DCR and its applications
- Understanding Campus Planning
- Sensitive to Socio-Economic aspects
- An orientation to Computer Aided Drafting

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

DESIGN STUDIO

Small complexes – multi planning circulation analysis – massing problems involving building technology – Design and detailing for movement of physically handicapped and elderly persons within and around buildings, examples, shopping center (Commercial) apartments (Residential) Nursing home (Institutional) home for aged. Introduction to three dimensional modeling of spaces using computer. Construction and manipulation of three dimensional building data bases, Rendering 3D images, Presentation techniques.

TOTAL:180 PERIODS

References:

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

BAR 501 BUILDING SERVICES III L T P/S C

3 0 0 3

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 firefighting equipment and their installation.
- To familiarize the students with the fundamentals of acoustics and principles in designing
  various built environment.

COURSE OUTCOMES:

- The students are exposed to various air conditioning systems and their applications. They are also exposed to various design issues in the distribution system.
- An understanding of fire safety, fire fighting, fire prevention and installations in buildings including codal requirements.

The students are exposed to fundamentals of a acoustics and its applications in buildings

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

BASIC REFRIGERATION PRINCIPLES

Thermodynamics – Heat – Temperature, measurement transfer – Change of state – Sensible heat – Latent of fusion, evaporation, sublimation – Saturation temperature – Super heated vapor – sub cooled liquid pressure temperature relationship for liquids – Refrigerants.

UNIT II **8**

REFRIGERATION CYCLE AND SYSTEM COMPONETNS

Vapor compression cycle – compressors – evaporators – Refrigerant control devices – electric motors – starters – Air handling units – Cooling towers.

UNIT III **10**

AIR-CONDIONING SYSTEM AND APPLICATIONS

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

UNIT IV **12**

FIRE SAFETY – GENERAL PROVISIONS

Causes of fire in buildings – safety regulations – NBC – Planning considerations in buildings like Non-combustible materials, construction, staircase and life lobbies, fire escapes and A.C. systems. Special features required for physically handicapped and elderly in building types.

UNIT V **6**

FIRE DETECTION AND FIGHTING INSTALLATIONS

Heat and smoke detectors – Fire Alarm system, snorkel ladder – Fire lighting pump and water storage – Dry and Wet risers – Automatic sprinklers.

TOTAL: 45 PERIODS

Text Books:

1. William H. Severns and Julian R. Fellows, “Air conditioning and Refrigeration”, John Wiley and Sons, London, 1988.

References:

1. A.F.C. Sherratt. “Air conditioning and Energy Conservation”, The Architectural Press, London.

2. “National Building Code”.

BAR 502 HISTORY OF ARCHITECTURE V L T P/S C

3 0 0 3

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,
- urbanization, 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

COURSE OUTCOMES:

- The condition of modernity and its impact on architecture has been introduced. The evolution of modern architecture from specific aspects of modernity like Industrialization, Urbanization etc and its post-world war II trajectories were studied.

An overall understanding of the architectural developments of colonial India was obtained.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

LEADING TO A NEW ARCHITECTURE

Historical overview – Origins if Neo-Classicisms – Enlightenment Architects: Boulle and Ledoux. Beginning of New Extra – Industrial Revolution & its impart – Materials & Technology's History of Steel concrete glass.

UNIT II **8**

REVIEWING INDUSTRIALIZATION

Architecture Industrial Exhibition Arts and Crafts Movement in Europe and America – Art Nouveau and the works of Gaudi, Horta, Guimard, Macintosh – Early works of F.L. Wright.

UNIT III **10**

ISSUES OF ORNAMENTATION AND AESTHETICS

Adolf loos and the Arguments on Ornamentation – Futurists Movement Manifestos and the works of Sant Elia – Expressionism and the works of Mendelssohn, Taut, Polzeig – Cubism and Constructivism and its influence on Architecture – De stijl : Ideas and works.

UNIT IV **12**

INSTITUTIONS

Werkbund and Bahaus/Works of Behrens and Gropius – Cannonising Modernism – International Style – CIAM Congresses and Declarations.

Works and Ideas – Le Corbusier – Mies – Later Works of Wright – Alvar Alto.

UNIT V **6**

ARCHITECTURE IN COLONIAL INDIA

Colonialism and its impact – Early British Neo – classical Architecture – Indo – Sarcenic Architecture and the works of Chisholm – P.W.D. and the Institutionalisation of Architecture – Building New Delhi.

TOTAL: 45 PERIODS

Text Books:

2. Mechy Design – “Architecture after Independence”.

References:

1. Leonardo Benevolo, “History of Modern Architecture”, 2 Vols. Routledge & Kegan Paul, London, 1971.

2. Manfredo Taferi/Franceso dal co., “Modern Architecture”, Faber and Faber / Electra, 1980.

3. Sigfried Giedion, “Space Time and Architecture”. The Growth of a New Tradition, Harvard University Press, 1978.

4. Thomas Metcalf, “An Imperial Vision”, Faber and Faber, London. 1989.

5. Tzonis Alexander – Santiago Calatrava International Publication

6. Kenneth Frampton, “Modern Architecture”. A Critical History, Thames and Hudson, London 1994.

BAR 503 **DESIGN OF STRUCTURES III** **L T P/S C**

3 0 0 3

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.
- Case studies and models applicable.

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Understand the different concepts in designing footings and columns and Masonry walls using LSD methods.
- Concepts of Prestressed concrete and applying them in real case.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

LIMIT STATE DESIGN OF RCC COLUMS

Code provisions – design of axially loaded short and long columns of rectangular and circular sections – ties and spiral reinforcements.

UNIT II **8**

LIMIT STATE DESING OF BEAMS, SLABS AND STAIRCASE

Limit state design of continuous beams and slabs using code coefficients. Types of staircases – design of doglegged staircase.

UNIT III **10**

SEISMIC STUDY AND STRUCTURAL APPLICATION IN BUILDING DESIGN

Introduction of seismic study – identification of seismic zones – effects of earthquake in environment and in built forms – types of structural damages due to seismic effects – precautions in structural design – form and shapes of built forms and structures. Materials related to structural forms – related building codes – safety factors.

UNIT IV **12**

WORKING STRESS DESIGN OF FOUNDATION

Types of foundation – isolated pad footings – combined footings – design principles for rafts, pile foundations. (No design calculations)

UNIT V **6**

WORKING STRESS DESIGN OF RETAINING WALLS

Design of RCC Cantilever retaining walls

TOTAL: 45 PERIODS

Text Books :

1. P. Dayaratnam, “Design of Reinforced Concrete Structure”, 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.

References:

1. Vazirani and Ratwani, ‘Concrete Structures’, Khanna Publishers, New Delhi 1969.

2. S.N. Sinha ‘Reinforced Concrete Design’ Tata McGraw Hill, New Delhi 1998.

3. Ashok K. Jain ‘Reinforced Concrete Limit State Design” Nemchand, Bros Roorkeee 1983.

BAR 5E1 **ELECTIVE I** **L T P/S C**

3 0 0 3

ENERGY EFFICIENT ARCHITECTURE

OBJECTIVES:

- To inform the need to use alternative sources of energy in view of the depleting resources
  and climate change.
- To familiarise the students with simple and passive design considerations

- To inform about the importance of day lighting and natural ventilation in building design
- To make the students aware of the future trends in creating sustainable built environment.

COURSE OUTCOMES:

- The students are exposed to alternative sources of energy and are exposed to passive design considerations
- An understanding on day lighting and natural ventilation in design in addition to the future trends in creating sustainable built environment

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

PASSIVE DESIGN

Significance of Energy Efficiency in the contemporary context, Simple passive design considerations involving Site Conditions, Building Orientation, Plan form and Building Envelope -

Heat transfer and Thermal Performance of Walls and Roofs

UNIT II **8**

ADVANCED PASSIVE ARCHITECTURE- PASSIVE HEATING

Direct Gain Thermal Storage ofWall and Roof - Roof Radiation Trap - Solarium - Isolated Gain

UNIT III **10**

PASSIVE COOLING 8

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

UNIT IV **6**

DAY LIGHTING AND NATURAL VENTILATION

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

UNIT V **12**

CONTEMPORARY AND FUTURE TRENDS 12

Areas for innovation in improving energy efficiency such as Photo Voltaic Cells, Battery Technology, Thermal Energy Storage, Recycled and Reusable Building materials, Nanotechnology, smart materials and the future of built environment, Energy Conservation Building code.

TOTAL: 45 PERIODS

TEXTBOOK:

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

3. Majumdar M, Energy Efficient Building in India, TERI, 2000.

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

4. The energy efficient home: a complete guide by PatrickWaterfield, Crowood press ltd.

5. Dean Hawkes, Energy Efficient Buildings:Architecture, Engineering and Environment,

W.W. Norton & Company

6. David Johnson, Scott Gibson, Green from the Ground Up: Sustainable, Healthy and Energy efficient home construction, Published April 2008 by Tauton.

BAR 5E1 **ELECTIVE I** **L T P/S C**

3 0 0 3

THEORY OF DESIGN

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.

COURSE OUTCOMES:

An ability to think about architecture as one of the many fields under the broader ambit of design as a fundamental human activity.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION TO DESIGN

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 **8**

DESIGN METHODOLOGY MOVEMENT

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 **10**

CREATIVE THINKING

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 **12**

ARCHITECTURAL CREATIVITY

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 **6**

DESIGN AND PEOPLE

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

TOTAL: 45 PERIODS

TEXTBOOK:

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,Wiley 2008 VNR, 1994
5. Christopher Alexander, Pattern Language, Oxford University Press,1977
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, Penguin, 1990.
3. Design methods- Christopher Jones, Wiley, 1980.
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

BAR 5L2 COMPUTER STUDIO II L T P/S C

0 0 4 3

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.

COURSE OUTCOMES:

- The students benefit by learning software which helps them to better visualize complicated forms and also helps in producing photo realistic images of those 3D forms.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5

CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		**Indirect**	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **10**

INTRODUCTION TO COMPUTER AND IMAGE EDITING

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.

UNIT II **15**

THE BASICS OF BUILDING MODELLING

Creating a basic floor plan, About Temporary Dimensions, Adding and Modifying Walls, Working with Compound Walls, Using Editing Tools, Adding and Modifying Doors, Adding and Modifying Windows

UNIT II **20**

VIEWING THE BUILDING MODEL

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

UNIT IV **15**

INTRODUCTION TO 3D MODELLING

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.Solidmodelingwith primitive command andBoolean operation.

UNIT V **15**

3D RENDERING AND SETTING

Project: Visualize a building. Explore the potential of lights and camera 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. Exercise to identify and visualize a building using the above said utilities.

TOTAL: 75 PERIODS

TEXTBOOK:

1. Photoshop 7Bible ProfessionalEdition,Wiley John&Son INC,NewYork,Deke McClelland, 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.

3. 3D MAX - 6 Bible, Wiley, 2004.

BAR 504	**Materials and Construction – IV**	**L T P/S C**
		2 0 4 4

OBJECTIVES:

- To study ferrous and non ferrous materials in construction.
- 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.

COURSE OUTCOMES:

- An Understanding of ferrous and Non-ferrous metals in terms of its properties, manufacture and their applications in architectural construction.

  The students are made to be aware of plastics and its applications in building industry as well as light roofing materials adhesives, Sealants and fillers apart from flooring finishes

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

1 FERROUS METALS 5

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

2 STEEL CONSTRUCTION 10

Structural steel sections - types of connections in steel - steel in foundations, columns and

beams - different types of steel roof trusses including northlight truss - space frames - materials for roofcovering. Steel staircases and handrails,balusters. Steel doors and windows - openable, sliding - collapsible gates - rolling shutters. Steel in furniture and other interior uses. Detailing and specification for physically handicapped.

3 NON FERROUS METALS **15**

Aluminium and Aluminium Alloys - brief study on manufacture,properties and uses - Aluminium products - extrusions,foils,castings,sheets,etc.-tin and lead,properties and uses - current developments.

4 CONSTRUCTION USING NON-FERROUS METALS **20**

Aluminium doors - openable, sliding,
pivoted. Aluminium windows -
openable,sliding,fixed,pivoted.
Aluminium ventilators - top hung,bottom
hung,pivoted,louvred,fixed. Aluminium partitions,false
ceiling,shopfront handrails,curtainwalling. Aluminium
roofing - northlight glazing bar ,Aluminium roofing
sheets.

Use of other nonferrous metals like copper,bronze,brass,etc.,in architectural construction. Detailing and specification for physically handicapped.

5 PLASTICS **10**

Thermoplastics and thermosets - properties and architectural uses of plastics - structural plastics - reinforced plastics and decorative laminates - plastic coatings,adhesives and seatants - modifiers and plasticzers - fillers and stablizers - fabrications of plastics. Primary plastic building products for walls,roof and partitions -
secondary building products for rooms,windows,roof lights, domes,gullers handrails.

TOTAL:60 PERIODS

TEXTBOOKS:

1. .C.Rangwala,Engineering Materials, Charotar Publishing House,India,1997.
2. B.C.Punmia,Building Construction,laxmi Publications Pvt.Ltd.,New Delhi,1993.
3. Arthur Lyons - Materials for Architects and Builders - An Introduction - Arnold,London,1997.
4. Don A.Watson,Construction Materials and processes,McGraw Hill Co.,1972.
5. Harold B.Olin,Construction Principles materials and Method, The Institute of Financial Education, Chicago,1980.

6. Time Saver Standards for Architectural Design Data,Callendar JH,McGraw Hill,1974.

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http://www.arcadia
products.com
http://www.sail.com.in

BAR 6LI	ARCHITECTURAL DESIGN VI	L T P/S C
		0 0 16 8

OBJECTIVES:

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

COURSE OUTCOMES

- Understanding DCR and its applications
- Understanding Campus Planning
- Sensitive to Socio-Economic aspects

- An orientation to Computer Aided Drafting

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I

DESIGN STUDIO

Design of large structures – Multiuse multispan – non masonry building types involving buildings – Design and detailing for movement and use by physically handicapped people within and around building technology and services.

Examples: College (Institutional) Office Buildings Resorts – etc., Working drawings for any one design using computers.

TOTAL: 180 PERIODS

References:

1. Edward D Mills, “Planning, 4 volumes”, Newnas Butterworths, London 1976.

2. E and OE “planning” 11ffee Books Ltd., London 1973.

3. National Building Code 151

4. Da Chara and Callandar, “Time saver standards for building type McGraw Hall Col. 1983.

5. Henry J Cowan,foerresr Wilson Structural Systems -Van Nostrand Reinhold Company, London / New York

6. Mario Salvadori Robert Heller Structures in Architecture- Prentice International series in Architecture

BAR 601 BUILDING SERVICES IV L T P/S C

3 0 0 3

OBJECTIVES:

- To study the design issues for the selection of various systems and their installation for sound absorption and noise control
- To inform of the various ways by which acoustical design can be achieved in buildings
- To familiarize the students with the fundamentals of acoustics and principles in designing
  various built environment.

COURSE OUTCOMES:

The students are exposed to fundamentals of a acoustics and its applications in buildings

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		

6	End Semester Examinations		

UNIT I **9**

FUNDAMENTALS

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

UNIT II **12**

SOUND TRANSMISSION AND ABSORPTION

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

UNIT III **10**

NOISE CONTROL AND SOUND ABSORPTION

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

UNIT IV

CONSTRUCTIONAL MEASURES **8**

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

UNIT V **6**

ACOUSTICS AND BUILDING DESIGN

Site selection, shape, volume, treatment for interior surface, basic principles in designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls and theatres.

TOTAL: 45 PERIODS

Text Books:

1. B.J. Smith, R.J. Peters, “Stephanie Owen – acoustics and Noise” Control – Longman Group Ltd., - New York, USA. 1982.

References:

1. Dr. V. Narasimhan – “An Introduction to Building Physics” – Kabeer printing Works, Chennai – 5. 1974.

2. D.J. Groomet – “Noise, Building and People” – Pergumon Press – 1997.

3. Thomas D. Northwood – "Architectural Acoustics" – Dowden, Hutchinson and Ross Inc. 1997.

4. Peter Templeton and Saunders- Detailing for Architectural acoustics – Architectural press Acoustical design for Auditoriums – IS 2526 ISI 1963

5.S.L .Suri Acoustics Design and Practice Asia Publishing house

BAR 602 HISTORY OF ARCHITECTURE – VI L T P/S C

3 0 0 3

OBJECTIVES:

- To introduce the context for the critiques of modern architecture and the evolution of new approaches.
- To study in detail the different post modern 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 Indianans.

COURSE OUTCOMES

The context for the critique of modern architecture and the evolution of new approaches were introduced. The different post modern directions in architecture were studied in detail. The trajectory of Architecture in post-colonial India was understood.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey

3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **5**

CRITIQUING MODERNISM

Challenging CIAM declaration: Team X and Brutalism – Writing of Venturi – Jane Jacobus – Aldo Rosi – Christopher Alexander.

UNIT II **15**

AFTER MODERNISM

Conditions of POST – Modernity – Tools of New Architecture: Collage, Technology and New Science – Canonization of Post – Modernist Architecture – Historic Revivalism – Pop Architecture – Critical Regionalism – Deconstructivist Theory and Practice.

UNIT III **5**

ALTERNATIVE PRACTICE

Ideas and Works of Fathy – Baker – Ando – Soleri – Bawa.

UNIT IV **20**

POST – INDEPENDENT ARCHITECTURE IN INDIA

Chandigarh and Bhuvaneswar experiments – Influence of Corbusier, Louis Kahn, Koenigsberger – The formation of Institutions – Debates on Tradition as source and burden – works and ideas : Nari Gandhi – Doshi – Kanvinde – Correa – Raje – Jain – Stein Housing and the issues of Appropriate Technology – Architecture in the Horizon.

TOTAL: 45 PERIODS

Text Books:

1. Kenneth Frampton, “Modern Architecture: A Critical History”, Thames and Hudson, London, 1994.

2. Miki Desai etc. al, “Architecture and Independence”, Oxford University Press New Delhi 1998.

References:

1. Aldo Rossi, ‘The Architecture of the City”, MiT Press, Massachusett 1982.

2. Charles Jencks, “The Language of Post – Modem Architecture”, 1984.

3. Christopher Alexander, “Pattern Language”, Oxford University Press Oxford.

4. D. Ghirardo, “Architecture After Modernism”, Thames and Hudsoi London, 1980.

Robert Venturi, “Complexity and Contradiction in Architecture”, The Architectural Press, London,

BAR 603 COST ESTIMATION L T P/S C

3 0 0 3

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 about cost control and about valuation and depreciation
- To inform students on writing feasibility report of a project.

COURSE OUTCOMES

Students learn the art of building construction through specification writing. Students learn to work out the approximate estimate, detailed estimate for small scale building projects and low cost housing

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION TO ESTIMATION

Types and purpose, approximate, estimate, detail estimate of building, Bill of quantity format.

Quantity survey – Principle of measurement and billing, elementary billing and measurement of basic materials like brick wood, concrete, etc., Advance billing and measurement of basic materials like brick wood, concrete, etc., Advance billing and measurement of structural and service item of work.

UNIT II **8**

COST ESTIMATING

Function of cost planner, liaisons with consultant construction planning techniques for efficient cost control or cost budgeting of a project.

Exercise in variation, cost adjustment and cost analysis norms and standard for building project. Relationship between specification with B.O.Q. on ground of cost economics.

UNIT III **12**

COST BUILDING

The business environment, and its structure in practice details and information on taxation, depreciation, operation cost, economics of buildings plant and materials handling.

UNIT IV **10**

FINANCE AND BUDGETING

Financial control and management for building construction and maintenance investment role of various financial agencies for building and land development.

UNIT V **6**

PROJECT EVALUATION

Financial of projects, economic feasibility report, valuating depreciation and its implication, and assessment of completed project.

TOTAL: 45 PERIODS

Text Books:

1. Dutta, “Estimating and Costing”, S. Dutta and Co., Lucknow

References:

1. S.C. Rangwala, “Elements of Estimating and Costing”, Charoter Publishing House, India.

2. W.H. King and D.M.R. Esson, “Specification and Quantities for Civil Engineering”, The English University Press Ltd.

3. “T.N. Building Practice”, Vol. 1. Civil, Govt. Publication

4. “P.W.D. Standard specification”, Govt. Publication.

5. CPWD Specifications- Government of India

BAR 604 HUMAN SETTLEMENTS PLANNING L T P/S C

2 0 2 4

OBJECTIVES:

- To have an overview on the vocabulary of Human settlements To understand the various
  elements of Human Settlements and the classification of Human Settlements
- To familiarize the students with Planning concepts and process in Urban and Regional Planning.

COURSE OUTCOMES:

- To explore the students about the dynamics of Urban Form and various Human Settlements pattern
- To understand the interrelationship between Human Settlements structure and Social Dynamics

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION

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

UNIT II **8**

PLANNING CONCEPTS

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

UNIT III **10**

URBAN PLANNING

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

UNIT IV **12**

URBAN DEVELOPMENT PROGRAMMING

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

UNIT V **6**

RURAL PLANNING

Rural settlement structure – Demographic dynamic – micro level planning: Scope and content.

TOTAL: 45 PERIODS

References:

1. C.L. Doxiadis, Ekistios, “An Introduction to the Science of Human Settlements”, Hutchinson, London 1968.

2. Madras Metropolitan Development Authority, “Master Plan for Madras Metropolitan Area, Second Master Plan – 1995”.

3. Government of India, “Report of the National Commission on Urbanisation” 1988.

4. Ministry of Urban affairs and Employment, Government of India, New Delhi “Urban Development plans: Formulation & implementation” – Guidelines - 1996.

5. Hansen N. “Regional Policy and Regional Integration” Edward Elgar, UK, 1996.

6. Centre for Human Settlements, Anna University, Chennai “Development Plan for Uthokottai Taluk, Cheyyur Taluk”, 1999.

7. Andro D Thomas Housing and Urban renewal george Allen and Unwin Sydney

BAR 6E2 SUSTAINABLE ARCHITECTURE I

L T P/S C

3 0 0 3

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.

OUTCOMES:

- The students are oriented about the concepts of ecosystem carrying capacity, ecological
  footprint, sustainability and sustainable development.
- The students are aware of the emerging vulnerabilities of global warming and climate change and understand the contribution of building industry to the same.
- The students are familiar with the various approaches to achieving sustainable buildings and communities
- The students understand the various incentives and evaluation systems for green buildings

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey

3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

AIM

To sensitize students about the importance and need for Sustainable Planning concept and Appropriate Architectural Design concepts as an emerging thrust area.

OBJECTIVE

• To make student aware about the concepts, of environment, ecology, role of institutions in the country.

• To provide basic knowledge on Sustainable Technologies involved – tracing the growth of settlements – their response to climate – other technical options.

• To provide an orientation to students from Macro Level to Micro Level Design aspects, and

• To expose to students International and National Level agenda on concepts of conservation of Environment and its implications on sustainable concepts of Architecture and planning.

UNIT I **9**

INTRODUCTION

Planning Concept – Environment Impact Analysis – Ecological Footprints – Essential ingredients of Sustainable Development apart from Social and Economical – Environment, Stakeholders Participation, and Institutional Mechanism.

UNIT II **8**

DEVELOPMENT IN HISTORICAL CONTEXT

Early settlement pattern – Climate Responsive Planned Layouts – orientation of Streets and Buildings, Creation of Habitable Environment, Early Planning Methods – Land Generation, Soil and Water Conservation, Bioregional Approach.

UNIT III **10**

RESOURCE EFFICIENCY

Land, Water, Energy, Human Resource, Biodiversity – Suitable practices at settlement, Campus and Building Level

UNIT IV **12**

SUSTAINABLE ARCHITECTURE

Appropriate materials and construction – review of their properties workability, Eco Friendly construction practices – Need for Legislation – sustainable campuses, neighborhoods, programs and case studies.

UNIT V **6**

SUSTAINABLE PLANNING AND POLICIES

Awareness program at National, International levels Rio de Jenero agenda – Earth summits – agenda involved – their realization.

TOTAL: 45 PERIODS

TEXT BOOKS

Manik & Girish Komisva, IIPA, keeping Cities Clean and Green, Uppal Publishing House, 1997.

Beer, Environment Planning for Site Development.

REFERENCES

Bioclimatic Architecture – ENEA and IN/ARCH Publication Edition – 1989.

Brotoc, Sustainable architecture high-tech housing.

Roofs, Eco-house a design guide.

BAR 7LI	**ARCHITECTURAL DESIGN VII**	**L T P/S C**
		0 0 18 8

OBJECTIVES:

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

OUTCOMES

The students looked at various components and aspects associated with the urban environment in
terms of physical infrastructure, socio cultural aspects, gender issues etc. and looked at ways to
address them through their designs. Mapping and diagramming techniques were explored in the
design process to help explore the design process better.

CO/PO Mapping
S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT II

DESIGN OF ADVANCED AND COMPLEX PROBLEMS **180**

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

TOTAL: 180 PERIODS

References:

1. Edward D Mills, ‘Planning 4 volumes”, newness Butterworths, London 1976.

2. E and 05 “Planning London” 11ffe Books Ltd 1973.

3. “National Building” Code ISI

4.De Chiara and Callendar – “Time savers standards for Building Types”- McGraw Hill Co. 1973.

BAR 701 URBAN DESIGN L T P/S C

2 0 2 4

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

COURSE OUTCOMES

The students understood the role of Urban design as a discipline, and its role in understanding and interpreting a city. Various reading methods were explored, to understand the historical as well as present urban form. They also looked at addressing urban design issues in terms of awareness creation as well as with possible ways to address them.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry

4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION

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

UNIT II **8**

ROLE OF SPACE IN HISTORICAL TOWNS

Comparative analysis of public spaces, their organization and articulation in pre-history, early, mediaeval and renaissance periods in west and east.

UNIT III **10**

ORGANISATION OF SPACE

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

UNIT IV **12**

RENEWAL AND RE-DEVELOPMENT

Objectives, surveys program of urban renewal and public involvement and participation.

UNIT V **6**

CONTEMPORARY PRACTICE

Townscape policies, need for new bye-laws, regulations and emerging areas of development.

TOTAL: 45 PERIODS

Text Books:

1. Gordon Cullen – “The concise Townscape” – The Architectural Press – 1978.

References:

1. Lawrence Hatprin – “Cities” Reinhold Publishing Corporation N.Y. 1964.

2. Gosling and Maitland – “Urban Design” – St. Martin’s Press, 1984.

3. Jonathan Barnett – “An Introduction to Urban Design” – Harper & Row, Publishers, N.Y. 1982.

4. Image of the city –Kevin Lynch

5. Architecture of Town and cities – Paul D Speriregon The MIT press

6. Urban Design – Ornamentation & Decoration – Cliff Monghtin

7. Urban Design – Street and square – Cliff Monghtin

8. Town and square – Paul Zucker – Bath prss

9. Urban Pattern - Arthur B Gallion CBS Publication

10. Architecture and Urban Experience – Raymond J Curran

11. Indian city in the Arid west – Kulbhushan Jain – Aadi centre

BAR 702 REEARCH METHODOLOGY AND PRE THESIS WORK L T P/S C

2 0 2 4

OBJECTIVES:

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 their interest during the

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

Practical Training -I undertaken by the student in IX semester and obtain approval from the Department before commencement of the Practical Training-II at the X semester.

The dissertation proposal in about 1500 words stating the topic, issues to be explored and the scope must be submitted before the commencement of Practical Training II for the approval of the department. The topic chosen may range from analyzing the works of an architect,

history,typological changes, writing, design process and many more. After approval the work would be reviewed atleast twice during the semester by the department. Students are advised to seek the guidance of the architects under whom they go through the Practical Training II. The final dissertation report shall contain objectives, followed by exhaustive documentation and arguments. The emphasis however, could vary according to the topic. 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 appear for the Viva voce examination to be conducted at the end of Practical Training II.

TOTAL: 15 WEEKS

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

BAR 703 PROFESSIONAL ETHICS & PRACTICE L T P/S C

3 0 0 3

OBJECTIVES:

- To give an introduction to the students about the architectural profession and the role of professional bodies and statutory bodies.
- To teach the students about the importance of code of conduct and ethics in professional practice and the mandatory provisions as per Architects Act 1972.
- To expose the students some of the important legal aspects and legislations which have a bearing on the practice of architectural profession.
- To enable the students to grasp the advanced issues concerning professional practice such as tendering, contracting including alternative practices in project execution and project management.
- To expose the students to the implications of globalization on professional practice with particular reference to WTO and GATS and equip them for international practice.

COURSE OUTCOMES:

- Understand the role of professional and statutory bodies

- Understand the provisions in Architects Act 1972
- Understand code of conduct

Understand the process and role of an architect in project execution.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

EASEMENTS Definition – types of easement – acquisition extinction and protection of easements.

UNIT II **8**

TENDER

Calling for tenders – tender documents – open and closed tenders – item rate, lump sum, labour and demolition tender – conditions offender – submission of tender – scrutiny and recommendations.

UNIT III **12**

CONTRACT

Conditions of contract – Form of contract articles of agreement – Contractor's bill certification.

UNIT IV **10**

ARBITRATION

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

UNIT V **6**

LEGISLATION

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

TOTAL: 45 PERIODS

References:

1. J.J. Scott, “Architect’s Practice”, Butterworth, London 1985.

2. Publications of COA IIA “Hand book on Professional Practice”, The Architects publishing Corporate of India, Bombay 1987.

3. D.C. Rules for Chennai Metropolitan Area 1990.

4. T.N.D.M. Building Rules, 1972.

5. T.N.P. Building Rules, 1942.

6. Chennai City Corporation Building Rules 1972.

7. Denk Sharp, The Business of Architectural Practice William Coliins Sons & Co. Ltd., 8 Erafton St. London W1 1986.

8. Roshan Namavathi, Professional Practice, Lakshmi Book Depot, Mumbai 1984.

9. Publication of IIA.

10. Environmental Laws of India – by Kishore Vanguri, C.P.R. Environmental Education Centre Chennai.

11. The Tamil Nadu Hill Areas Special Building Rules – 19.

12. Heritage Act

13. Consumer Protection Act.

14. Indian Easements Act.

BAR 704	**PROJECT MANAGEMENT**	**L T P/S C**
		3 0 0 3

OBJECTIVES:

- The understand different management techniques suitable for planning and constructional
  projects.

- To understand the management system for accomplishing the task efficiently in terms of both time and cost.

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Apply the project management techniques in solving the constructional problems efficiently.
- Different PMT to be applied in respective areas.
- The course of a work from the start to the finish to analysed before the commencement of the project.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION TO PROJECT MANAGEMENT

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

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

UNIT II **8**

PROJECTS PROGRAMMING

Project programming, resources balancing, phasing of activities, program, scheduling, project control, reviewing, updating and monitoring.

Introduction to modem management, concepts, uni dimensional management techniques – Introduction to PERT and CPM introduction to network concepts, network elements and inter-relationships.

UNIT III **10**

NETWORK – TECHNIQUES

Network techniques, network logic o inter relationships, activity information, data sheets, development of network.

CPM for management, CPM network analysis, identification of critical path float computation result sheets.

UNIT IV **12**

PERT NETWORK

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

UNIT V **6**

PROJECT COST

Introduction to two dimensional network analysis, activity cost information. Cost time relationship, crashed estimates for the activities, compression potential, cost slope, utility, data sheet, project direct cost and indirect cost.

Crashed program, network compression least cost solution least time solution, optimum time solution. Network techniques, PERT/CPM, generating alternative strategies using computers.

TOTAL: 45 PERIODS

Text Books:

1. Dr. B.C. Punmiya and K.K. Khandelwal – “Project Planning and Control with Pert/CPM” Laxmi Publications. New Delhi, 1987.

References:

1. S.P. Mukhopadyay, “Project Management for Architects and Civil Engineers”, IIT, Kharagpur, 1974.

2. Jerome D. Wiest and Fenfinand K. Levy, “A Management Guide to PERT / CPM”. Prentice Hall of Indian Pub. Ltd. New Delhi 1982.

3. R.A. Burges and G. White, “Building production and Project Management”, The Construction Press, London 1979.

BAR 7E3 INTERIOR DESIGN L T P/S C

3 0 0 3

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.

COURSE OUTCOMES:

An understanding of interior design as an interdisciplinary as well as allied field related to architecture.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		

6	End Semester Examinations		

UNIT I **9**

INTRODUCTION TO INTERIOR DESIGN

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 **8**

HISTORY OF INTERIOR AND FURNITURE DESIGN

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 **10**

COMPONENTS OF INTERIOR SPACE- INTERIOR TREATMENT AND FINISHES

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 **12**

COMPONENTS OF INTERIOR SPACE- LIGHTING AND LANDSCAPING

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 **6**

COMPONENTS OF INTERIOR SPACE- - FURNITURE

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

TEXTBOOK:

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

BAR 7E3 LANDSCAPE AND ECOLOGY L T P/S C

3 0 0 3

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.

COURSE OUTCOMES

- Understanding of the scope of landscape architecture in the subject
- Basic understanding of elements of landscape
- Understanding of impact of human activities on the environment and the role of architect in mitigating it

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION

Introduction to ecology, landscape conservation, reclamation and landscaping of derelict areas.

UNIT II **8**

PLANT MATERAILS

Notes on basic plant data for plant selection and planting design.

UNIT III **10**

GARDEN DESIGN

A brief description of Mughal gardens of India, Japanese gardens and Italian gardens. Basic principles of landscape design and the visual aspects of plant forms.

UNIT IV **12**

SITE PLANNING

Site investigation appraisal and site planning neighbourhood parts, Children's parks toilets and sports area.

UNIT V **6**

LANDSCAPING OF FUNCTIONAL AREAS

Landscaping for various types of housing areas. Landscaping design for waterfront areas and functional areas in urban centers. Principles of urban landscape, urban design and architectural control.

TOTAL: 45 PERIODS

References:

1. Garrett Eckobo. “The Art of Home landscaping”, McGraw Hill Book Co., London, 1956.
2. Sylvia Crow Sheila Haywood, “The Gardens of Mughal India”, Vikas Publishing House Pvt. Ltd., India, Delhi India, 1973.
3. Testsuro Yoshida, “Gardens of Japan”, Jr. Marcus G. Sims, 1963.
4. “Clift Tandy hand Book of Urban Landscape”, The Architectural Press, London, 1871.
5. Harvey M. Rubenstain, “A guide to Site and Environmental Planning” 3rd Volume John Wiley and Sons, New York, 1987.
6. John O. Sinurds – “Earthscape”, McQraw Hill BOOK Co., New York 1878.
7. T.K Bose & Chowdhary , Tropical garden plants in colour, Allied publishers, Calcutta
8. Bring.M Japanese Gardens, Design & Meaning
9. Introduction to landscape Design,Motloch J L Van Nostrand Rienhold Company

THESIS

OBJECTIVES:

All the architectural design courses offered since semester II culminate in the thesis Project to motivate students to involve in individual research and methodology. This is to train them in handling projects independently.

COURSE OUTCOMES

A comprehensive understanding in handling a major Architectural independently

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni

5	Quiz		
6	End Semester Examinations		

TOPICS OF STUDY

The main areas of study and research can include advanced architectural design, including contemporary design processes, urban design including urban-infill, environmental design, conservation and heritage precincts, housing etc. However, the specific thrust should be architectural design of built environment. Preparation of presentation drawings, working drawings, detailed drawings and study model are part of the requirements for submission.

METHOD OF SUBMISSION

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

TOTAL: 510 PERIODS

TEXTBOOK:

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, 1979.

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 Energy

Efficient Buildings, TATA McGraw Hill Publishing Company Limited, New Delhi, 2007

BAR 8E3 ARCHITECTURAL CONSERVATION

OBJECTIVES:

• To introduce the various issues and practices of Conservation.

• To familiarise the students with the status of conservation in India and the various agencies involved in the field of conservation worldwide and their policies.

• To outline the status of conservation practice in the country and the various guidelines for the

preservation, conservation and restoration of buildings.

• To inform the students about the character and issues in our heritage towns through case studies.

COURSE OUTCOMES

1. The student understands importance of heritage, issues and practices of conservation through case studies.

2. The student will gain understanding on historic materials and their properties various technologies for investigating masonry, foundation and also traditional and modern repair methods.

CO/PO Mapping

S – Strong, M – Medium, W – Weak

COs	PO1	PO2	PO3	PO4	PO5
CO1	S				
CO2		W	S		M
CO3		M		S	
CO4	S		M	W	
CO5	S		M	W	

Course Assessment Methods:

Direct		Indirect	
1	Internal Tests	1	Students Exit Survey
2	Assignments	2	Faculty Survey
3	Seminar	3	Industry
4	Online test	4	Alumni
5	Quiz		
6	End Semester Examinations		

UNIT I **9**

INTRODUCTION TO CONSERVATION

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 **8**

CONSERVATION IN INDIA

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

UNIT III **10**

CONSERVATION PRACTICE

Listing of monuments- documentation of historic structures- assessing architectural character –

historic structure report- guidelines for preservation, rehabilitation and adaptive re-use of historic structures- Case studies of Palaces in Rajasthan, Chettinad and Swamimalai dwellings,

seismic retrofit and disabled access/ services additions to historic buildings-heritage site management

UNIT IV **12**

URBAN CONSERVATION

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

UNIT V **6**

CONSERVATION PLANNING

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

TOTAL: 45 PERIODS

TEXTBOOK:

1. DonaldAppleyard, The Conservation of European Cities, M.I.T. Press,Massachusetts,

1979.
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

BAR 9VI PRACTICAL TRAINING - I (INDIA)

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

Students to undergo practical training for duration of one semesters with minimum 90 working days during IX semester of the course in an approved firm under an Architect. This firm should be an established one of at least 5 years of existence or training can be taken up in registered private organization / government departments, CMDA, PWD, CPWD etc.

The Choice of the place of training shall be Architectural Firms, Organisations, Development Authorities, etc which are headed by eminent architects. The choice of the office shall be approved by the Directory, School of Architecture and Planning.

The practical training, primarily involves learning in the office and on the site. The practical training shall be assessed periodically by monthly reports from the employers of trainees.

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

i. Architectural office training
ii. Site supervision and training
iii. Critical study of project built
iv. Field Documentation of Architectural details and working drawing.

B. Documentation of any Architectural Heritage building or Architectural landmark will be done as a group work (Maximum of 4 students per group) for a period of a month and will be evaluated

BAR 9SI DISSERTATION – INTIAL STAGE

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 their interest during the Practical Training -I undertaken by the student in IX semester and obtain approval from the Department before commencement of the Practical Training-II at the X semester. The dissertation proposal in about 1500 words stating the topic, issues to be explored and the scope must be submitted before the commencement of Practical Training II for the approval of the department. The topic chosen may range from analyzing the works of an architect, history, typological changes, writing, design process and many more. After approval the work would be reviewed atleast twice during the semester by the department. Students are advised to seek the guidance of the architects under whom they go through the Practical Training II. The final dissertation report shall contain objectives, followed by exhaustive documentation and arguments. The emphasis however, could vary according to the topic. 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 appear for the Viva voce examination to be conducted at the end of Practical Training II.

TOTAL: 15 WEEKS

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

BAR XV PRACTICAL TRAINING - II

(ABROAD – OPTIONAL/EXCHANGE PROGRAMS)

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

Students to undergo practical training II for duration of one semesters with minimum 90 working days during X semester of the course in an approved firm under an Architect.

The Choice of the place of training shall be Architectural Firms, Organisations, Development Authorities, etc which are headed by eminent architects. The choice of the office shall be approved by the Directory, School of Architecture and Planning.

The practical training II, primarily involves learning in the office and on the site. The practical training shall be assessed periodically by monthly reports from the employers of trainees.

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

i. Architectural office training

ii. Site supervision and training

iii. Critical study of project built

iv. Field Documentation of Architectural details and working drawing.

B. Documentation of any Architectural Heritage building or Architectural landmark will be done as a group work (Maximum of 4 students per group) for a period of a month and will be evaluated

BAR XSI DISSERTATION – REPORT

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 their interest during the The final dissertation report shall contain objectives, followed by exhaustive documentation and arguments. The emphasis however, could vary according to the topic. 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 appear for the Viva voce examination to be conducted at the end of Practical Training II.