



**PERIYAR
MANIAMMAI**
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University)
Established Under Sec. 3 of UGC Act, 1956 • NAAC Accredited
think • innovate • transform

Criterion 1 – Curricular Aspects

Key Indicator	1.1	Curriculum Design and Development
Metric	1.1.3	Average percentage of courses having focus on employability/ entrepreneurship/ skill development offered by Architecture.

DEPARTMENT OF ARCHITECTURE

SYLLABUS COPY OF THE COURSES HIGHLIGHTING THE FOCUS ON EMPLOYABILITY/ ENTREPRENEURSHIP/ SKILL DEVELOPMENT

1. List of courses for the programmes in order of

S. No.	Programme Name
i.	Bachelor of Architecture
ii.	Bachelor of Design (Interior Design)
iii.	Master of Architecture

2. Syllabus of the courses as per the list.

Legend : Words highlighted with **Blue Color** - Entrepreneurship
Words highlighted with **Red Color** - Employability
Words highlighted with **Purple Color** - Skill Development

1. List of courses for the B.Arch, B.Des., M.Arch, Ph.D Programmes

S.No	Name of the Course	Course Code	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1.	History of Architecture – I	XAR101	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and Test
2.	Theory of Architecture – I	XAR102	2007-08	EMPLOYABILITY -Sketches, Models, Assignment and Seminar and test
3.	Architectural Graphics –I	XAR104	2007-08	EMPLOYABILITY - Sketches, Assignment, Seminar, Model, Discussion, Site visit and Test
4.	Communication skills	XAR105	2019-20	SKILL DEVELOPMENT - Discussion, Writing, Speaking and Test
5.	Visual Arts I	XAR106	2007-08	SKILL DEVELOPMENT - Sketches and Model
6.	Basic Design	XAR107	2007-08	SKILL DEVELOPMENT -Sheets, Model and Sketches
7.	History of Architecture – II	XAR201	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and Test
8.	Theory of Architecture – II	XAR202	2007-08	EMPLOYABILITY -Sketchs, Models, Assignment and Seminar and test
9.	Mechanics of Structures – I	XAR203	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and Test
10.	Architectural Graphics –II	XAR204	2007-08	EMPLOYABILITY - Plates or sheets , Sketches and Models
11.	Materials and Construction –I	XAR205	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and plates
12.	Model making & Visual Arts II	XAR206	2007-08	SKILL DEVELOPMENT - Sketches and Model
13.	Architectural Design – I	XAR207	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
14.	History of Architecture – III	XAR301	2007-08	EMPLOYABILITY - Sketches, Assignment, Seminar, Model, Discussion, Site visit and Test
15.	Site Surveying and Planning	XAR302	2007-08	EMPLOYABILITY - Sketches, Assignment, Seminar, Model, Discussion, Site visit and Test
16.	Mechanics of Structures – II	XAR303	2007-08	EMPLOYABILITY - Sketches, Assignment, Seminar, Model, Discussion, Site visit and Test
17.	Building Services – I	XAR304	2007-08	EMPLOYABILITY - Sketches, Assignment, Seminar, Model, Discussion, Site visit and Test
18.	Materials and Construction –II	XAR305	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and plates

19.	Computer Applications in Architecture - I	XAR306	2007-08	SKILL DEVELOPMENT -2D, 3D Model
20.	Architectural Design – II	XAR307	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
21.	History of Architecture – IV	XAR401	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
22.	Climate and Architecture	XAR402	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
23.	Design of Structures – I	XAR403	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
24.	Building Services – II	XAR404	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
25.	Materials and Construction – III	XAR405	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and plates
26.	Entrepreneureship essentials	XAROE11	2019-20	EMPLOYABILITY - Assignments, Test
27.	Web design	XCSOE1	2019-20	EMPLOYABILITY - Assignments, Test, Seminar
28.	Literature , culture and media	XAROE1H	2019-20	EMPLOYABILITY – Assignments, Test
29.	Product design and development	XMEOE1	2019-20	EMPLOYABILITY - Assignments, Test, Seminar
30.	Introduction to film studies	XAROE1E	2019-20	EMPLOYABILITY - Assignments, Test
31.	Forest and their management	XAROE1A	2019-20	EMPLOYABILITY - Assignments, Test
32.	Basics of Language sciences	XAROE1J	2019-20	EMPLOYABILITY - Assignments, Test
33.	Multimedia design and development	XCSOE4	2019-20	EMPLOYABILITY - Assignments, Test and Seminar
34.	Introduction to cognitive psychology	XAROE1D	2019-20	EMPLOYABILITY - Assignments, Test
35.	Non convenmtional energy resources	XAROE1C	2019-20	EMPLOYABILITY - Assignments, Test
36.	The nineteenth century english novels	XAROE1G	2019-20	EMPLOYABILITY - Assignments, Test
37.	English language for competitve exam	XAROE1F	2019-20	EMPLOYABILITY - Assignments, Test
38.	Psycology of stress, health and well being	XAROE1B	2019-20	EMPLOYABILITY - Assignments, Test
39.	Architectural Design – III	XAR407	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
40.	Design of Structures – II	XAR501	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
41.	Contemporary Architecture	XAR502	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
42.	Culture and Architecture	XAR503	2015-16	EMPLOYABILITY - Assignment, Seminar, Model and Discussion

43.	Site planning and Surveying	XAR504	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
44.	Materials and Construction- V	XAR505	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and plates
45.	Digital Design & Media tools	XAR506	2015-16	SKILL DEVELOPMENT - Sketches and Model
46.	Architectural Design – IV	XAR507	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
47.	Human Settlement Planning	XAR601	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
48.	Vernacular Architecture	XAR602	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
49.	Estimation and Costing	XAR603	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
50.	Energy Efficient Architecture	XAR604	2015-16	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
51.	Materials and Construction – VI	XAR605	2007-08	EMPLOYABILITY - Assignments, Sketches, Site visit, Model and plates
52.	Architectural Working Drawing and Specifications	XAR606	2015-16	EMPLOYABILITY- Site visit, Plates and Model
53.	Architectural Design – V	XAR607	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
54.	Urban Economics and Sociology	XAR701	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
55.	Advanced Building Services	XAR702	2015-16	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
56.	Project Management	XAR703A	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
57.	Interior design and detailing	XAR704A	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
58.	Seminar	XAR705	2015-16	EMPLOYABILITY, SKILLDEVELOPMENT- Assignment Seminar , Discussion and oral presentation
59.	Architectural Design – VII	XAR706	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
60.	Practical training	XAR801	2007-08	ENTREPRENEURSHIP Students work as an intern for six months in a reputed architectural firm getting involved in real time architectural design projects and their execution.
61.	Professional Practice and Ethics	XAR901	2007-08	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
62.	Housing	XAR902	2015-16	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
63.	Architectural Conservation	XAR903A	2015-16	EMPLOYABILITY - Assignment, Seminar, Model and Discussion
64.	Landscape Architecture	XAR904B	2015-16	EMPLOYABILITY - Assignment, Seminar, Model and Discussion

65.	Dissertation	XAR905	2015-16	EMPLOYABILITY - Real time study , analysis and proposal for societal need projects
66.	Architectural Design – VIII	XAR906	2007-08	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
67.	Thesis	XAR1001	2007-08	ENTREPRENEURSHIP - Students select individual project and design based on the study of Special study, Literature study, Case study, Site analysis, Concept development, plan, elevation, sections, views . models
68.	Introduction to Landscape	XID501	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
69.	Advertising and Brand Management	XID502D	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
70.	Computer Aided Design – I	XID503	2018-19	SKILL DEVELOPMENT - Plates or sheets
71.	Interior Materials and Construction Technology – V	XID504	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
72.	Working Drawing and Specifications -II	XID505	2018-19	EMPLOYABILITY - Site visit, Plates and Model
73.	Interior Design – IV	XID506	2018-19	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
74.	Professional Practice	XID601	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
75.	Retail Interiors	XID602	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
76.	Theatre & Set Design	XID603D	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
77.	Interior Materials and Construction Technology –VI	XID604	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
78.	Furniture / Product Design	XID605	2018-19	EMPLOYABILITY - Plates, Assignments, Seminar and Test
79.	Interior Design – V	XID606	2018-19	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
80.	Emerging Practices in Housing	YAR101	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
81.	Appropriate Materials and Technology for Sustainable Architecture	YAR102	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
82.	Advanced Studies in Regional and Vernacular Architecture	YAR103	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
83.	Services in High rise Buildings	YAR104	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis

84.	Architectural Design Studio –I	YAR105	2012-13	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
85.	Contemporary Theories and Trends	YAR201	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
86.	Research Methodology	YAR202	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
87.	Advanced Materials and Construction Technology	YAR203A	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
88.	Digital Design Process in Architecture	YAR204	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
89.	Building Management Systems	YAR205	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
90.	Architectural Design studio II	YAR206	2012-13	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
91.	Sustainable Urban Landscape	YAR301	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
92.	Heritage Conservation Planning	YAR302	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
93.	Urban Design Practices	YAR303	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
94.	Energy Simulation and Modelling	YAR304B	2012-13	EMPLOYABILITY - Assignments, Seminar , Test, Real time study and analysis
95.	Dissertation	YAR305	2012-13	EMPLOYABILITY - Real time study , analysis and proposal for societal need projects
96.	Architectural Design Studio –III	YAR306	2012-13	ENTREPRENEURSHIP - Sheets, Sketches, Literature study, Case study and Models
97.	Thesis	YAR401	2012-13	ENTREPRENEURSHIP- Students select individual project and design based on the study of Special study, Literature study, Case study, Site analysis, Concept development, plan, elevation, sections, views . models

SYLLABUS OF COURSES IN THE ORDER GIVEN AS PER LIST OF COURSES

SUB CODE			XAR 101		L	T	P	C
SUB NAME			HISTORY OF ARCHITECTURE - I		3	0	0	3
C	P	A			L	T	P	H
3	0	0			3	0	0	3
UNIT – I ANCIENT INDIA								7
Indus Valley Civilization - Culture and pattern of settlement. Aryan civilization - Evolution of early Aryan architectural forms - origins of early Hinduism - Vedic culture Vedic village and the rudimentary forms of bamboo and Wooden construction under the Mauryan rule - origins of Buddhism and Jainism.								
UNIT – II BUDDIST ARCHITECTURE								10
Hinayana and Mahayana Buddhism - Architectural Production during Ashoka's rule - Ashokan Pillar. Salient features of a Chaitya hall and Vihara- Karli , Rani Gumpha								
UNIT – III HINDU ARCHITECTURE								8
Evolution of Hindu temple - Early shrines of the Gupta and Chalukyan periods – Tigawa temple, Ladh Khan Aihole, Papanatha and Virupaksha temples, Pattadakal. A comparative study of the Buddhist and Hindu styles								
UNIT – IV DRAVIDIAN ARCHITECTURE								10
Rock cut productions under Pallavas –Shore temple, Mahaballipuram - Kailasanathar temple & Vaikunthaperumal temple, Kanchipuram, Dravidian Order – Evolution of Gopuram, city planning, Brihadeeswara Temple, Tanjore - Meenakshi temple, Madurai - Srirangam temple.								
UNIT – V INDO ARYAN STYLE								10
Salient features of an Indo Aryan temple - Lingaraja Temple- Bhuvaneswar , Sun temple- Konarak. Kunds and Vavs – vav - Adalaj - Surya kund, Modhera – Khandharia Mahadev temple, Khajuraho - Dhilwara temple, Mt. Abu. A comparative study of the Dravidian and Indo-Aryan styles.								
			LECTURE	TUTORIAL	PRACTICAL	TOTAL		
			45	0	0	45		
TEXT								
1. Percy Brown, “Indian Architecture (Buddhist and Hindu Period)”, Taraporevala and Sons, Bombay, 1983. 2. Satish Grover, “The Architecture of India (Buddhist and Hindu Period)”, Vikas Publishing Housing Pvt. Ltd., New Delhi, 2003. 3. Christopher Tadgell, “The History of Architecture in India from the Dawn of civilization to the End of the Raj”, Longman Group U.K.Ltd., London, 1990.								
REFERENCES								
1. George Michell, “The Hindu Temple”, BI Pub., Bombay, 1977. 2. Stella Kramrisch, “The Hindu Temple”, Motilal Banarsidass, 1976. 3. Parameswaranpillai V.R., “Temple culture of south India”, Inter India Publications, 4. George Michell Ed, “Temple Towns of Tamil Nadu”, Marg Pubs, 1995. 5. Raphael D., “Temples of Tamil Nadu Works of Art”, Fast Print Service Pvt Ltd., 1996.								

SUBCODE			XAR 102			L	T	P	C
SUB NAME			THEORY OF ARCHITECTURE-I			3	0	0	3
C	P	A				L	T	P	H
3	0	0				3	0	0	3
UNIT – I WHAT IS ARCHITECTURE?									5
Few definitions to architecture.									
Objective, scope and need for architecture. Its applications.									
UNIT – II ARCHITECTURE IS A MULTIDISCIPLINARY FIELD (OCCUPATION)									5
The functional and aesthetic components of architecture.									
The relationship between architecture and technology.									
The relationship between architecture and fine arts.									
Design process: Intuition vs analysis and synthesis (artistic vs scientific)									
UNIT – III AESTHETIC COMPONENT									15
Form & space: Unity of opposites, Shapes, visual and emotional effects of geometric forms - The sphere, the cube, the pyramid, the cylinder and cone and their derivatives, Subtractive & additive forms – linear, radial, centralized, clustered, grid.									
UNIT – IV ARCHITECTURAL SPACE									10
Space defining elements: Vertical, horizontal and curved elements.									
Spatial relationship: space within a space, interlocking spaces, adjacent spaces, spaces linked by common spaces.									
Spatial organization: influencing factors and their types: centralized, linear, radial, cluster, grid with examples .									
UNIT – V PRINCIPLES OF DESIGN									10
Proportion: Need for proportion, Golden Proportion, Modular. Indian proportion and Japanese Proportions.									
Scale: The need for scale, human scale and generic scale.									
Ordering Principles: Balance, Rhythm, Symmetry, datum, hierarchy, pattern and axis citing									
			LECTURE	TUTORIAL	PRACTICAL	TOTAL			
			45	0	0	45			
TEXT									
1. V.S.Pramar, Design Fundamentals in Architecture, Samaiya Publications Private Ltd., New Delhi, 1973.									
REFERENCES									
1. Paul Alan Johnson - The Theory of Architecture - Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.									
2. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979.									
3. Helm Marie Evans and Caria David Dunneshil, An initiation to design, Macmillan Publishing Co. Inc., New York .									

SUB CODE			XAR 104			L	T	P	C
SUB NAME			ARCHITECTURAL GRAPHICS – I			3	0	0	3
C	P	A				L	T	P	H
3	0	0				3	0	0	3
Course Objectives									
<ul style="list-style-type: none"> To prepare students for three-dimensional visualization and representation of complex geometrical objects in the form of two and three dimensional drawings. To educate students with the basics of drafting tools and their application in the process of drawing preparation. To educate students with concepts and fundamentals of architectural drawings. 									
Course Outcome:						Domain		Level	
CO1	Understand the concepts of architectural drawings					Cognitive Psychomotor		Knowledge	
CO2	Ability to represent complex geometrical forms in two and three dimensional drawings of varied scales.							Application	
CO3	Draw Orthographic projections, Axonometric and Isometric views of three-dimensional objects in varied scales.					Affective		Application	
UNIT – I INTRODUCTION TO GEOMETRICAL DRAWING									15
Introduction to fundamentals of geometrical drawing - Construction of lines, line value, line types, lettering, dimensioning, representation, format for presentation, etc. Use of scales in drawing – plain, diagonal and comparative scales									
UNIT – II : PLANE GEOMETRY									20
Construction of planar surfaces - square, circle, curve, polygon etc, Projection of points, lines and planes									
UNIT–III : ORTHOGRAPHIC PROJECTIONS									10
Orthographic Projection of solids – simple and complex solids, section of solids, true shape of solids – intersection and interpenetration of solids.									
UNIT–IV : AXONOMETRIC PROJECTIONS									10
Introduction to Axonometric projections – Isometric and Oblique projections. Construction of basic shapes and combination of shapes and solids in Isometric projections.									
UNIT – V : MEASURED DRAWING									20
Fundamentals of measured drawing – draw the plan, elevation and section of simple objects - furnitures and building components using suitable scale.									
						Lecture	Tutorial	Practical	Total
						45	-	-	45
TEXT BOOKS									
1. I.H.Morris – Geometrical drawing for Art Students. Orient Longman – Madras 1982 2. Albert. O. Halse – Architectural Rendering Techniques McGraw-Hill Book Co. New York 1972									
REFERENCES									
1. George K.Stegman, Harry J.Stegman, Architectural Drafting Printed in USA by American Technical Society, 1966. 2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.									

- ## WEBSITES

- | | | | | | | | |
|-----------------|----------|----------|-----------------------------|----------|----------|----------|----------|
| SUB CODE | | | XAR 105 | L | T | P | C |
| SUB NAME | | | COMMUNICATION SKILLS | 1 | 0 | 1 | 3 |
| C | P | A | | L | T | P | H |
| 3 | 0 | 0 | | 1 | 0 | 1 | 3 |

9

UNIT- II SPEAKING, READING AND WRITING

9

UNIT- III DESCRIPTIVE PRESENTATION

9

UNIT – IV ANALYTICAL PRESENTATION

9

UNIT – V PROJECT PROPOSAL PRESENTATION

9

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	15	0	30	45

1. V.R. Narayanaswamy, Strengthen Your Writing (Orient Longman)
2. Jaya Sasikumar, Champa Tickoo, Writing With A Purpose, Published by Oxford University Press | Paper Back | Language – English
3. *Freeman, Sarah: Study Strategies*, New Delhi: Oxford University Press, 1979.
4. Paul Gunashekar M.L. Tickoo, Reading for Meaning, Published by S. Chand & Company Ltd. Sultan Chand & Company

1. Sharon Hendenreich Springer - English for Architects and civil Engineers -, 2014 ISBN

2. Sharon Hendenreich Springer - English for Architects and civil Engineers -, 2014 ISBN 978-3-658-030-63.

SUB CODE			XAR 107	L	T	P	C
SUB NAME			BASIC DESIGN	0	0	6	9
C	P	A		L	T	P	H
2	1.5	1.5		0	0	6	12
UNIT – I INTRODUCTION TO DESIGN							30
Definition of design - Design Thinking - Design Process - Design problems and solutions. Exercises using points and lines.							
UNIT – II PRINCIPLES OF VISUAL COMPOSITIONS							50
Principles of Design and its role in expression (architectural expression) Introduction to principles of organization/composition Repetition, Variety, Radiation, Rhythm, Gradation, Emphasis & Subordination, Proportion, Harmony, Balance, Focal point, Symmetry, Asymmetry, Background, Foreground, Sense of Direction – Exercises to explore the above principles - Symmetrical and asymmetrical compositions and patterns by organization of shapes, expressing themes using geometrical or organic shapes.							
UNIT –III STUDY OF COLOURS							30
Study of classification of colours with different hues, values, and shades. Exploring colour theories and applying them in visual composition – Example: Poster design							

UNIT – IV VISUAL PROPERTIES				20
Study of Visual Properties - visual textures, optical illusion etc. and apply them in visual composition – Example : Collage				
UNIT –V FORMS – GEOMETRIC / SCULPTURAL				50
Exploring the forms - Linear and Planar, fluid and plastic forms using simple material like Match stick, Mount Board, metal foil, wire string, thermocol, clay, plaster of Paris etc. Study of Solids and voids to evolve sculptural forms and spaces, Additive models using similar forms / dissimilar forms, subtractive models from a given geometric form - using various materials and mediums like casting , moulding, etc.,				
	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	180	180
TEXT				
<ol style="list-style-type: none"> 1. Maitland Graves – The Art of Colour and Design McGraw-Hill Book company Inc. 1951 2. Albert O.Halse, Architectural Rendering. 3. A techniques of contemporary – presentation McGraw HillBook Company, New York, 1972. 4. Mulick Milind, Water colour, Jyotsna Prakasan, Mumbai 2002. 5. Farey; A. Cyril, Architectural Drawing perspective and Rendering – A Hand book for students and draftsmen 6. John W.Mills - The Technique of Sculpture, B.T.Batsford Limited, New York - Reinhold PublishingCorporation, London, 1966. Elda Fezei, Henny Moore, Hamlyn, London, New York, Sydney, Toronto, 1972. 7. C.Lawrence Bunchy - Acrylic for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972. Orbid Publishing Ltd., Know how the complete course in Dit and Home Improvements No.22, Bed fordbury, London, W.C.2, 1981. 				
REFERENCES				
<ol style="list-style-type: none"> 1. Edward D.Mills - Planning the Architects Hand Book - Bitterworth, London, 1985. 2. V.S.Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Nelhi, 1973. 3. Francis D.K.Ching - Architecture - Form Space and Order Van Nostrand Reinhold Co., (Canaa), 1979. 				
WEBSITES				
<ol style="list-style-type: none"> 1. http://infinet.net – elements of design 2. http://www.okino.com - design, visualization, rendering system. 3. http://www.interface-signage.com 4. http://www.designcommunity.com – arch rendering, 3D design 				

SUB CODE			XAR 201	L	T	P	C
SUB NAME			HISTORY OF ARCHITECTURE - II	3	0	0	3
C	P	A		L	T	P	H
3	0	0		3	0	0	3
UNIT – I INTRODUCTION TO INDO ISLAMIC ARCHITECTURE							10
<p>Advent of Islam into the Indian subcontinent and its impact - Factors Influencing Islamic Architecture- socio-cultural, political - Evolution of building types in terms of forms and functions - the Mosque, the Tomb, and Minaret, the Madarasa, the Caravanserai.</p> <p>Elements and character of Islamic architecture in terms of structure, materials and methods of construction. Elements of decoration, color, geometry, light.</p>							
UNIT-II ISLAMIC ARCHITECTURE-IMPERIAL ERA							12
<p>Evolution of architecture under the Slave kings – Khalji - Qutub mosque, Qutubminar, Tomb of Nasir - ud - din - Mohammed shah, eg.: Alai Darwaya, Tughlaq - eg. Tomb of Ghiyas - ud - din Tughlaq, Kirki mosque, Delhi., Sayyid and Lodhi Dynasties – tombs in Punjab- eg.: Mothi - Ki - Masjid.</p>							
UNIT-III ISLAMIC ARCHITECTURE - PROVINCES							10
<p>Evolution of regional architecture and the factors influencing - geographic, cultural, political, etc., - Bengal – Adina mosque, Gujarat - earlier period – Mosque at Broach, Jami Masjid at Ahmedabad, middle period - Mosque at Champanir, Teen Darwaza, later period - Siddisayad mosque, Shah Alam Rauza, Adalaj - step well , Rani Rupavatis Mosque, Jaunpur- Jami Masjid of Jaunpur, Malwa - royal complex at Mandu, Kashmir – Jami Masjid, Srinagar, Deccan (Gulbarga, Bidar, Golconda and Bijapur)</p>							
UNIT-IV MUGHAL ARCHITECTURE							13
<p>Evolution of Mughal architecture - cities and gardens under the Mugal rulers Babur - eg. Humayuns Tomb – Delhi, Akbar - Agra fort, Fate-pur-sikri - site planning, Jodhabais palace, Birbal palace, Diwan-e- khas, Salim Chisti's Tomb & Buland Darwaza; Jahangir - Akbar's mausoleum at Sikandra, Shahjahan - Red fort, Jami Masjid at Delhi, Taj - Mahal - Agra.</p>							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT							
<ol style="list-style-type: none"> 1. Percy Brown, “Indian Architecture (Islamic Period)”, Taraporevala and Sons, Bombay, 1983. 2. Satish Grover, “Islamic Architecture of India”, CBS Publishers, New Delhi, 2002. 3. Christopher Tadgell, “The History of Architecture in India from the Dawn of civilization to the End of the Raj”, Longmon Group U.K.Ltd., London, 1990. 							
REFERENCES							
<ol style="list-style-type: none"> 1. Christopher Tadgell, “The History of Architecture in India”, Penguin Books (India) Ltd, New Delhi, 1990. 2. R.Nath, “History of Mughal Architecture”, Vols I to III - Abhinav Publications, New Delhi, 1985. 3. Catherine Asher, “Architecture of Mughal India”, Cambridge University Press, 2001. 4. Monica Juneja, “Architecture in Medieval India: Forms, Contexts, Histories”, New Delhi, Permanent Black, 2001 							

SUB CODE			XAR 202			L	T	P	C
SUB NAME			THEORY OF ARCHITECTURE - II			3	0	0	3
C	P	A				L	T	P	H
3	0	0				3	0	0	3
UNIT – I FUNCTIONAL AND AESTHETIC ASPECTS									10
The relationship between form and function found in natural objects and their aesthetics. Example flowers, fruits etc.									
The relationship between form and function found in man-made objects and their aesthetics. Example Knife, Chair etc.									
The work of an architect: tackling functional aspect and aesthetic aspects.									
Handling architectural projects: Planning, designing and execution.									
UNIT – II ANTHROPOMETRICS AND ITS APPLICATION									5
Determining size and shape of various activity spaces									
UNIT– III CLIMATE AND SITE									10
The impact of climatology on the design of spaces. Examples from the past and present.									
The impact of site conditions on the design of spaces. Examples from past and present.									
UNIT – IV BUILDING MATERIALS AND STRUCTURAL SYSTEM									10
The relationship between building materials and structural systems possible by them and the resultant forms. Examples from the past and present.									
UNIT – V SOCIO PSYCHOLOGICAL ASPECTS									10
Believes, values and the aspiration of the user and its impact on architecture. Examples from past and present.									
					LECTURE	TUTORIAL	PRACTICAL	TOTAL	
					45	0	0	45	
TEXT									
1. V.S.Pramar, Design Fundamentals in Architecture, Samaiya Publications Private Ltd., New Delhi, 1973.									
2. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979. Samaiya Publications Private Ltd., New Delhi, 2007.									
REFERENCES									
1. Paul Alan Johnson - The Theory of Architecture - Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.									
2. Helm Marie Evans and Caria David Dunneshil, An initiation to design, Macmillan Publishing Co. Inc., New York									

SUB CODE			XAR 203	L	T	P	C
SUB NAME			MECHANICS OF STRUCTURES - I	3	0	0	3
C	P	A		L	T	P	H
3	0	0		3	0	0	3
UNIT - I FORCES AND STRUCTURAL SYSTEMS							8
Units of Measurement- Introduction to Scalar and Vector, Types of force systems - Resultant of parallel forces - law of mechanics – coplanar and non-coplanar forces - Resolution and Composition of forces							
UNIT - II EQUILIBRIUM OF RIGID BODIES							7
Principle of moments - principle of equilibrium – Free body Diagram- simple problems, types of supports and their reactions – requirements of stable equilibrium							
UNIT – III ANALYSIS OF PLANE TRUSSES							10
Introduction to Determinate and indeterminate plane trusses - Analysis of simply supported and cantilevered trusses by method of joints and method of sections.							
UNIT – IV PROPERTIES OF SECTION							10
Centroid and Center of Gravity- Moment of Inertia- Polar Moment of Inertia- Product of Inertia- Introduction to Moment of Inertia of Masses with simple problems - Section modules – Radius of gyration - Theorem of perpendicular axis - Theorem of parallel axis							
UNIT –V ELASTIC PROPERTIES OF SOLIDS							10
Stress strain diagram for mild steel, High tensile steel and concrete - Concept of axial and volumetric stresses and strains. Elastic constants - Relation between elastic constants - Application to problems.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT							
1. R.K.Bansal – A textbook on Engineering Mechanics. Lakshmi Publications. Delhi 1992							
2. R.K.Bansal – A textbook on Strength of Materials Lakshmi Publications. Delhi 1998							
REFERENCES							
1. P.C.Punmia, Strength of Materials and Theory of Structures; Vol. I, Laxmi publications, Delhi 1994							
2. S.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							

SUBCODE			XAR 204	L	T	P	C
SUB NAME			ARCHITECTURAL GRAPHICS – II	1	0	2	4
C	P	A		L	T	P	H
0,6	1.2	0.6		1	0	2	5
UNIT - I MEASURED DRAWING							25
Detailed measured drawing/documentation of historic and architectural monument or building of small scale. Complete Documentation including the plan, section, elevation, details of building construction and technology.							
UNIT - II PERSPECTIVE							30
Characteristics of Perspective Drawings, Perspective systems and methods. Two point perspective of simple objects, outdoor and indoor view of a building, etc. One point and three point perspective of interiors Perspective theory and practice using scientific methods and short cut methods. Applying rendering techniques.							
UNIT - III SCIOGRAPHY							20
Principles of shades and shadows - Shadows of geometrical shapes and solids – construction of sciography on buildings and Shadows of architectural elements, etc.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			15	0	60	75	
TEXT							
1. Robert. W.Gill – Advanced perspective and Sciography Thames and Hudson London 1974 2. Claude Batley – Indian Architecture Taraporevala sons & co. Bombay.							
REFERENCES							
1. William Kirby Lockard, Drawing as a Means to Architecture, Van Nostrand, Reinhold Company, New York. 2. George A.Dinsmore, Analytical Graphics - D.Van Nostrand, Company Inc., Canada. 3. John M.Holmes, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1954. 4. Robert W.Gill, Basic Perspective, Thames and Hudson, London, 1974. 5. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964. 6. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, New York, 1975. 7. Ernest Norling, Perspective drawing, Walter Foster Art Books, California, 1986. 8. Bernard Alkins - 147, Architectural Rendering, Walter Foster Art Books, 1986.							
WEBSITES							
1. http://www.cs.brown.edu 2. http://www.dtcc.edu/-document,projectinfo-Arch.dwg .							

SUBCODE			XAR 205	L	T	P	C
SUB NAME			MATERIALS AND CONSTRUCTION - I	2	0	2	4
C	P	A		L	T	P	H
1.5	1	0.5		2	0	2	5
UNIT – I INTRODUCTION							15
Functional requirements of a building and its components - foundations, plinth, superstructure (framed and load bearing), roofing. Role of soil in building construction – Formation - grain size distribution – soil classification systems.							
PLATES :Section of a typical wall showing the various components of building							
ASSIGNMENTS :Drawing the various types of Foundations, Types of structure – load bearing, framed							
UNIT– II STONE							20
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. Plates & Assignments							
UNIT – II LIME							5
Lime - fat/Hydraulic Limes - Their properties and uses – Manufacturing process - Mortar, functions – requirements - mix proportions.							
UNIT – IV RURAL MATERIALS AND CONSTRUCTION							20
Mud as a building material - Soil stabilization, soil blocks - foundations - types, S.S.Block – S.S. Cast in situ walls - flooring - roofing - plastering. Bamboo, casuarinas coconut, palm, hay, coir, jute – properties - uses - fire retardant treatment termite proofing. Types of foundations - walls - simple roof trusses floors for rural structures. Assignments							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			30	0	30	60	
TEXT							
1. S.C.Rangwala – Engineering Materials Charotar Publishing House – Anand 1997							
2. W.B.Mckay – Building Construction Vol. 1,2,3- Longmans U.K 1981.							
REFERENCES							
1. R.J.S.Spencke and D.J.Cook, Building Materials in Developing Countries, John Wiley andSons, 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. Rural Construction - NBO, New Delhi							
WEBSITES							
1. http://www.bamboo-Flooring.com							
2. http://ag.avizona.edu/SWES							
3. http://www.angelfite.com/in							
4. http://www.idrc.ca/library/documents/104800/chapz-e.html							
5. http://www.angelfite.com/inz/granite							

SUB CODE			XAR 206	L	T	P	C
SUB NAME			MODEL MAKING & VISUAL ARTS – II	0	0	3	4
C	P	A		L	T	P	H
1	1.5	1.5		0	0	3	6
UNIT – I RENDERING TECHNIQUES							25
Rendering techniques for architectural drawings - building perspectives, interior & exteriors in various mediums like pencil, ink, pastels, water colours - opaque and transparent.							
UNIT – II MODEL MAKING - I							30
Simple geometrical objects with simple straight or curved shapes. Exercises in preparing site models representing groups of buildings as blocks, roads and landscaped open spaces.							
UNIT –III MODEL MAKING - II							35
Spatial awareness through model making. Articulation of planes, walls and volumes. Scale model of products furniture small scale structures such bus shelter, pavilions, kiosk etc. detailed model of buildings using the set of drawings (preferably their own design project)							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			0	0	90	90	
TEXT							
1. Arundell (Jan), Exploring Sculpture, Mills and Boon, London/Charles T.Branford Company, USA 1972 2. HJKJK John W.Mills, The Technique of Sculpture, B.T.Batsford Ltd., New York Reinhold Publishing Corpn., London. 1966.							

SUB CODE			XAR 207	L	T	P	C
SUB NAME			ARCHITECTURAL DESIGN - I	0	0	6	9
C	P	A		L	T	P	H
2	1.5	1.5		0	0	3	6
UNIT – I SUBTRACTIVE UTILITY SCULPTURE							24
Parameters of design, anthropometrics. Understating the relationship between the human activity, Interrelationship of architectural space to form, structure, and materials. Design of Subtractive utility sculpture -A Play object for 4-6 years age children.							
Areas of concern/ focus:							
<ul style="list-style-type: none"> • Scale and proportion • Activity analysis • Appropriate materials and construction 							
Methodology:							
Data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users							
Presentation:							
Concepts and presentation of design with scaled models and rendered drawings.							
UNIT – II ADDITIVE UTILITY SCULPTURE							24
Design of Additive utility sculpture – Utility object							
Areas of concern/ focus:							
<ul style="list-style-type: none"> • Scale and proportion • Activity analysis • Appropriate materials and construction 							
Methodology:							
Data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users							

Presentation: Concepts and presentation of design with scaled models and rendered drawings.				
UNIT – III STUDY				36
Study of Anthropometry details with free hand sketches and the study of the relationship between form and function in a man-made objects. Areas of concern/ focus: <ul style="list-style-type: none"> • scale and proportion • Behavioral aspects • Anthropometry details • Application of Forms in construction Methodology: Study of Anthropometric details and applications of forms in buildings. Presentation: Study work has to be done in outside the classroom.				
UNIT – IV DESIGN OF SPACE				36
Parameters of design, anthropometrics. Understating the relationship between the human activity and spatial, furniture requirements, Interrelationship of architectural space to form, structure, and materials. Redesign of single space such as own room etc. Areas of concern/ focus: <ul style="list-style-type: none"> • Scale and proportion • Activity analysis • Appropriate materials and construction Methodology: Data collection, Measure drawing of own room/case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users Presentation: Concepts and presentation of design with scaled models and rendered drawings.				
UNIT – V MULTIFUNCTIONAL SPACE				60
The design problem shall take into consideration of activities and their relationship with space, function, scale and proportion, climate. The project shall be Shop, Workshop, pavilions, snack bar, cafeteria Areas of concern/ focus: <ul style="list-style-type: none"> • scale and proportion • Behavioral aspects • Site planning • Appropriate materials and construction Methodology: Data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users Presentation: Concepts and presentation of design with scaled models and rendered drawings.				
	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	180	180
TEXT				
1. De Chiara and Callender, Time Saver Standard for Building Types, McGraw-Hill Co., 2nd Edition, 1980. 2. Edward D.Mills, Planning - The Architects Handbook - 10th Edition, British Library Cataloguing in Publication Data, 1985.				

3. Andrew Alpern, *Handbook of Speciality Elements in Architecture*, McGraw-Hill Book Co., 1982.
4. Neufert Architect's Data, Rudolf Herg, Crosby Lockwood and Sons Ltd., 1970.

REFERENCES

1. Edward D.Mills - Planning the Architects Hand Book - Bitterworth, London, 1985.
2. Francis D.K.Ching - Architecture - Form Space and Order Van Nostrand Reinhold Co., (Canaa), 1979.

SUB CODE			XAR 301	L	T	P	C
SUB NAME			HISTORY OF ARCHITECTURE - III	3	0	0	3
C	P	A		L	T	P	H
3	0	0		3	0	0	3
UNIT – I PREHISTORIC & EGYPTIAN ARCHITECTURE							5
Development of Shelter during prehistoric age. Factors influencing Architecture -Outline of Architectural Character of Egyptian architecture. Factors influencing Architecture							
UNIT–II WEST ASIA							10
Evolution of Sumerian, Babylonian and Persian cultures - Factors influencing architecture - Outline of architectural character - Palace of Sargon, Khorsabad - Palace at Persepolis.							
UNIT–III GREECE							10
Evolution architecture in the archaic and classic periods – Factors influencing architecture - Outline of architectural character – optical illusion in buildings, Orders in architecture - Doric Ionic and Corinthian, Parthenon, Athens;							
UNIT–IV ROME							10
Factors influencing architecture - outline of architectural character; Colloseum Rome; Pantheon, Rome							
UNIT–V EARLY CHRISTIAN AND BYZANTINE							10
Birth and spread of Christianity - Evolution of church forms - Factors influencing architecture - Outline of Architectural character - St.Sophia, Constantinople.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT							
1. Sir Banister Fletcher – A History of Architecture University of London, The Athlone Press 1986..							
REFERENCES							
1. Pier Liugi Nervi, General Editor - History of World Architecture - Series, Harry N.Abrams, Inc.Pub., New York, 1972.							
2. S.Lloyd and H.W.Muller, History of World Architecture - Series, Faber and Faber Ltd., London, 1986.							
3. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press, London, 1985. Gosta, E.Samdstrp, Man the Builder, McGraw-Hill Book Company, New York, 1970.							

SUB CODE			XAR 302		L	T	P	C
SUB NAME			SITE SURVEYING AND PLANNING		3	0	0	3
C	P	A			L	T	P	H
3	0	0			3	0	0	3
UNIT – I INTRODUCTION TO SURVEY AND ITS TECHNIQUES								9
Definition of plot, site, land and region, units of measurements, reconnaissance, and need for surveying. Chain survey and compass survey - Plane Table and Theodolite, total station surveys - various equipments used – simple field surveys.								
UNIT-II SITE ANALYSIS								10
Importance of site analysis - factors involved – 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								
UNIT-III SITE ANALYSIS TECHNIQUES								10
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 – Architectural and visual aspects.								
UNIT-IV SITE PLANNING AND LAYOUT PRINCIPLES								10
Context of the site. Preparation of site plan drawing – incorporation of site analysis factors, Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, road widths and parking, regulations. Turning radii & street intersections								
UNIT-V ENVIRONMENTAL FACTORS								6
Man-made structures, sensuous qualities, cultural data, images and data correlation - vegetation – plant associations, types and distribution - preparation of ecological profile for an area, basic understanding of agencies related to environmental regulations.								
				LECTURE	TUTORIAL	PRACTICAL	TOTAL	
				45	0	0	45	
TEXT								
1. W.M. Marsh - Landscape Planning, John Wilay& Sons, USA 1983.								
2. B.C.Punmia - Surveying Vol.I - Standard Book House, New Delhi - 1983.								
REFERENCES								
1. Kevin Lynch - Site planning - MIT Press, Cambridge, MA - 1967.								
2. Edward. T. Q., “Site Analysis”, Architectural Media, 1983.								
3. P.B.Shahani - Text of surveying Vol. I, Oxford and IBH Publishing Co - 1980								
4. Joseph De.Chiarra and Lee Coppleman - Planning Design Criteria - Van Nostrand Reinhold Co.,New York - 1968.								
5. Beer R, Environmental Planning for Site development, Turner, Landscape Planning and environmental impact design.								

SUB CODE			XAR 303	L	T	P	C
SUB NAME			MECHANICS OF STRCUTURES - II	3	0	0	3
C	P	A		L	T	P	H
2	0.5	0.5		3	0	0	3
UNIT – I SHEAR FORCE AND BENDING MOMENT							9
Concept of shearing forces and Bending Moments - shear force and bending Moment diagrams for cantilever and simply supported beams subjected to point load, uniformly distributed loads and their combinations.							
UNIT – II STRESSES IN BEAMS							9
Theory of simple bending -bending stresses in beams, shear stresses in beams - examples on simple sections. Stress distribution diagrams.							
UNIT – III DEFLECTION OF BEAMS							9
Slope and deflection at a section - Double Integration and Macaulay's method for simply supported and cantilever beams for concentrated loads and uniformly distributed loads.							
UNIT – IV THEORY OF COLUMNS							9
Short and long columns - Euler's method and its limitations - Derivations of Euler's formula (for different end conditions) – Rankine’s formula for columns (No derivations) – Application to simple problems.							
UNIT – V INTRODUCTION TO INDETERMINATE STRUCTURES							9
Concept in Analysis of continuous beams, fixed beams, and partial frames - Application to simple problems.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT							
1. M.M.Ratwani&V.N.Vazirani, Analysis of Structure, Vol.1, Khanna Publishers – Delhi, 1987							
2. A.R.Jain and B.K.Jain, Theory and analysis of Structures,Vol. 1, Nemchand and Bros, Roorkee, 1987.							
REFERENCES							
1. Dr.V.S.Prasad, Basic Structural Mechanics, Galgotia Publications.							
2. Timoshenko, S.P., and D.H. Young, Elements of Strength of Materials, Fifth edition, East West Press, 1993.							
3. B.C.Punmia, “Strength of Materials and Theory of Structures”, Vol. 1, Laxmi publications, New Delhi 1994.							
4. R.K. Rajput “Strength of Materials”, S.Chand& Company Ltd., New Delhi 1996							

SUB CODE			XAR 304			L	T	P	C
SUB NAME			BUILDING SERVICES - I			2	0	1	3
C	P	A				L	T	P	H
1	1	1				2	0	1	4
UNIT – I WATER QUALITY, PURIFICATION AND TREATMENT									10
Sources of water -Surface and ground water sources. Water quality - nature of impurities, Water treatment methods – Aeration, sedimentation, filtration, sterilization, disinfection and softening.									
Water requirements for all type of residential, commercial, industrial buildings and for town.									
UNIT–II WATER DISTRIBUTION AND STORAGE									16
Distribution systems in small towns - Types of pipes used - Laying, jointing, testing - prevention of water wastage and reuse of water. Plumbing-Internal water supply layout in buildings, pipe size calculations, Planning and layout of water supply distribution in residences. Types of water supply pumps and their applications - mechanical equipment. Automation systems. Water heating systems, solar water heaters. Energy efficient systems. Water requirements calculation and Water storage systems- Design and calculations of OHTs, UG Sumps and fire fighting storage.									
Understanding of service drawings. Site visits with documentation in the form of sketches/ drawings/ photos.									
UNIT–III STORM WATER DRAINAGE AND RAIN WATER HARVESTING									10
Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.									
Rainwater harvesting principles, rain water pipe calculation. Details of rain water disposal - roof drain, systems of sub soil drainage. Different types of pavements and details for water percolation.									
UNIT–IV SEWERAGE AND SANITATION									14
Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, Secondary treatment. Biological treatment. Modern types of sewage treatment plants.									
Sewer -Types of sewer systems, Construction details of Sewer line, gradients, manholes, inspection chambers, septic tank, leach pits, traps for various types and its details.									
Drainage and sanitation requirements for various private and public buildings. Drainage and sanitary appliance materials, fittings, pipes, sizes for toilet and kitchen fittings. Connection of lines to fittings. Choice of plumbing systems. Planning and layout of sanitary fittings in residences. Understanding of service drawings. Site visits with documentation in the form of sketches/ drawings/ photos.									
UNIT–V SOLID WASTE MANAGEMENT									10
Solid waste management concepts and systems, waste and resources, recycling solid waste in small and large buildings - Refuse collection, disposal, Incinerator, Composting, Vermicomposting, Sanitary Land filling, Biogas system and Modern renewable energy system., equipments for handling solid waste. Refuse chute, service core concepts.									
			LECTURE	TUTORIAL	PRACTICAL	TOTAL			
			30	0	30	60			

TEXT

1. S.C.Rangwala, Water Supply and Sanitary Engineering, Charotar Publishing House, 1989
2. National Building Code 2016.
3. Indian Standard Code of Practice for Water Supply in Buildings, IS :2065 – 1983'.
4. Mechanical and Electrical Equipment for buildings, Benjamin Stein, John.S.Reynolds, Walter.T.Grondzik, Alison.G.Kwok, 10th edition, John Wiley and Sons, London, 2006.
- 5.Punmia B.C., 'Waste Water Engineering', Laxmi Publications, 2009.

REFERENCES

1. Manual on Sewerage and Sewage Treatment, CPHEEO, Ministry of Works and Housing, New Delhi, 1980.
2. Handbook for Building Engineers in Metric systems, NBC, New Delhi, 1968.

SUB CODE			XAR 305	L	T	P	C
SUB NAME			MATERIALS AND CONSTRUCTION - II	2	0	2	4
C	P	A		L	T	P	H
0.6	2	1.4		2	0	2	5
UNIT – I BRICKS AND CLAY PRODUCTS							20
Drawings of brick foundations - buildings in brickwork, bonds columns, corners –structural members in brickwork. Reinforced brick masonry - Arches - Lintels – Corbels - copings. Hollow clay blocks - for walls - partitions - roofs. Roofings - Flat Roofs or Terrace roofs - Sloping roofs. Plates & assignments							
UNIT – II TIMBER AND ALLIED PRODUCTS							15
Softwood and hardwood - Physical properties and uses - Defects, Conversion, Seasoning, decay and preservation of timber - Fire retardant treatment, anti-termite treatment. Industrial timbers - plywood, block board, particle board, fibre boards. Manufacture and uses - current developments. Assignments							
UNIT– III TIMBER JOINERY							30
Introduction to timber joinery, Details of timber joinery for Windows, doors, ventilators. Timber partitions, paneling - false ceiling, fixed partitions, movable partitions. Timber staircases - Designed staircase - timber trusses - Lean-to – close couple - Kingpost - Queen post - Trusses. Timber floors - timber built-in-furniture. Plates through case studies							
UNIT – IV COST EFFECTIVE BUILDING TECHNOLOGY							10
Drawings of foundations – walling – Roofs – partitions – ceiling panel – doors and windows. Miscellaneous – Drawing of Brick jallies, Screen walls – pavement blocks – Ferrocement water tanks. Assignments							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			30	0	45	75	
TEXT							
1. S.C.Rangwala, Engineering Materials, Charotar Pub. House, Anand, 1997. 2. W.B.Mckay, 'Building Construction', Vol.1, 2, 3 Longmans, U.K. 1981.							
REFERENCES							
1. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972. 2. Alanwerth, Materials, The Mitchell Pub. Co. Ltd., London, 1986. 3. R.Chudleu, 'Building Construction Handbook', British Library Cataloguing in Publication Data. London. 1990.							

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

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

SUB CODE			XAR 306	L	T	P	C
SUB NAME			COMPUTER APPLICATIONS IN ARCHITECTURE - I	0	0	2	3
C	P	A		L	T	P	H
0.5	2	0.5		0	0	2	4
UNIT – I INTRODUCTION TO BASICS OF COMPUTER							4
Introduction to personal computers – hardware / software – operating system – important DOS commands – Windows. Introduction to MS Word, Excel.							
UNIT – II BASIC OF AUTOCAD							8
Basic introduction to CAD packages. Setting up & controlling the AutoCAD drawing environment – Creating & Editing Commands.							
UNIT– III AUTOCAD 2D DRAWINGS							20
Organizing a drawing with layers – Advanced geometry editing – Creating & using Blocks, Dynamic blocks. X –Referencing files. Inquiry tools. Text annotation. Creating & Customizing Hatch patterns. Productive Dimensioning – Defining Text & Dimension Styles. Printing & plotting							
UNIT – IV AUTOCAD 3D MODELS							16
Drawing utilities – importing / exporting files. Understanding 3D coordinate system - Using View ports – 3D drawing & Editing commands							
UNIT – V RENDERING AND PRESENTATION							12
Introduction to rendering in 3D – Rendering process – Enhancing digital images from CAD application using Adobe Photoshop, & other graphic programs. Use of Sketch Up for modeling of buildings and presentation of design projects as Photo realistic images and virtual architecture.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			0	0	60	60	
TEXT							
1. Omura George, "Mastering AutoCAD (Release 19)", BPB Publications, New Delhi, 2018.							
2. Omura George, " AutoCAD 2000", BPB Publications, New Delhi, 1997							
3. George Omura, Brian C. Benton, AutoCAD 2019 and AutoCAD LT 2019, Autodesk Official Press (SYBEX)							

SUBCODE			XAR 307	L	T	P	C
SUB NAME			ARCHITECTURAL DESIGN - II	0	0	6	9
C	P	A		L	T	P	H
2	5	2		0	0	6	12
UNIT – I CONTENT							180
<p>Projects involving single level planning in small scale, small span, horizontal movement and simple vertical movement.</p> <p>Areas of concern/ focus:</p> <ul style="list-style-type: none"> • Form-space relationships • Spatial organization • Behavioral aspects especially those relating to children • Site planning aspects • Appropriate materials and construction 							
<p>Suggestive Typologies/ projects:</p> <p>Residential buildings, institutional buildings: nursery or primary schools, schools for children with specific disabilities, primary health center, banks, neighbourhood market, neighbourhood library, Gate complexes including security Kiosk and entry/ exit gates.</p>							
<p>Methodology:</p> <p>Data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for physically handicapped persons –</p>							
<p>Presentation:</p> <p>Concepts and presentation of design with scaled models and rendered drawings.</p>							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			0	0	180	180	
TEXT							
<ol style="list-style-type: none"> 1. Joseph De Chiara, Michael J Crosbie, “Time Saver Standards for Building Types”, McGraw Hill Professional, 2001. 2. Julius Panero, Martin Zelnik, “Human Dimension and Interior Space”, Whitney Library of Design, 1975 3. Joseph De Chiara, Julius Panero, Martin Zelnik, “Time Saver Standards for Interior Design and Space Planning”, McGraw Hill, 2001. 4. Ernst Neuferts, “Architects Data,” Blackwell, 2002. 5. Ramsey et al, “Architectural Graphic Standards”, Wiley, 2000. 							
REFERENCES							
<ol style="list-style-type: none"> 1. Richard P. Dober, “Campus Planning” - Society for College and University Planning, 1996. 2. Achyut Kanvinde, “Campus design in India”, American year Book, 1969 3. Kevin Lynch, “Site planning”, MIT Press, Cambridge, 1967 4. Sam F. Miller, “Design Process: A Primer for Architectural and Interior Design”, Van Nostrand Reinhold, 1995. 							

SUB CODE			XAR 401		L	T	P	C
SUB NAME			HISTORY OF ARCHITECTURE - IV		3	0	0	3
C	P	A			L	T	P	H
3	0	0			3	0	0	3
UNIT – I ROMANESQUE								10
Architectural characters of Italy, France and England during Romanesque period - Examples: Pisa Complex, Italy- Abbay Aux Hommes, Caen, France - Tower of London, London, England								
UNIT – II GOTHIC								12
Outline of Architectural character in Italy, France and England during Gothic period - Examples: France - Notre Dame in Paris, Reims Cathedral, Beauvais Cathedral, England- Westminster Abbey, Hampton Court Palace, London, Italy - Doges Palace, Venice, Milan Cathedral. Evolution of vaulting and development of structural systems.								
UNIT – III RENAISSANCE								11
The idea of rebirth and revival and sociological influences in art and architecture - Emergence of merchant communities and their patronage. Different phases of Renaissance style in Italy, England and France. Typical Renaissance structures - Palaces in Italy, Domestic Architecture in England and Chateaux of France.								
UNIT – IV RENAISSANCE ARCHITECTS								12
Study of life history, philosophy and contributions of the Renaissance architects in Europe. Italy - Brunelleschi, Donatello, Raphael, Michelangelo and Andrea Palladio England - Sir Christopher Wren, Inigo Jones and John Webber France - Pierre Lescot, Philibert de l'Orme, and Jean Bullant								
				LECTURE	TUTORIAL	PRACTICAL	TOTAL	
				45	0	0	45	
TEXT								
1. Sir Bannister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986.								
REFERENCES								
1. Skpiro Kostof, A History of Architecture - Settings and Rituals, Oxford University Press, London, 1985.								
2. S.Lloyd/H.W.Muller, History of World Architecture - Series, Faber Ltd., London, 1986.								
3. Pier Luigi Nervi, History of World Architecture Series. Harry N. Abrame Inc. Publication, New York, 1972.								
WEBSITES								
1. http://www.clr.tornoto.edu - virtual lib.								
2. http://www.lib.virginia.edu/ - Renaissance and baroque								
3. http://2.sjis.umich.edu/ - Image browser								

SUB CODE			XAR 402			L	T	P	C
SUB NAME			CLIMATE AND ARCHITECTURE			3	0	0	3
C	P	A				L	T	P	H
0.6	1.2	1.2				3	0	0	3
UNIT – I CLIMATE AND THERMAL SENSATION									10
Factors that determine climate - Components of climate - Characteristics of climate types, Building design Approaches - Body heat balance - Effective temperature - Comfort zone Exercises on Mahoney chart, Comfort zone calculation, etc.,									
UNIT – II SOLAR CONTROL									10
Solar geometry - Solar chart – Sun path diagram - Sun angles and shadow angles. Design of solar shading devices.- Study projects, Shading device study models, etc.,									
UNIT – III HEAT FLOW THROUGH BUILDING MATERIALS									7
Basic principles of Heat Transfer, Performance and properties of different materials- calculation of 'U' value - Time lag and decrement of building elements-Study projects									
UNIT – IV AIR MOVEMENT									8
Wind rose - Wind shadows -The effects of topography on wind patterns - Air movement around and through buildings -The use of fans - Stack effect -Venturi effect - Thermally induced Air currents – Use of court yard.									
UNIT – V SHELTER DESIGN IN TROPICS									10
Design considerations for warm humid, hot dry, composite and upland climates, Heavy rainfall regions. Landscape and climatic design. Mini projects in relation with Architectural Design									
					LECTURE	TUTORIAL	PRACTICAL	TOTAL	
					45	0	0	45	
TEXT									
<ol style="list-style-type: none"> O.H. Koenigsberger and Others, “Manual of Tropical Housing and Building” – Part I - Climate design, Orient Longman, Madras, India, 2010. Bureau of Indian Standards IS 3792, “Hand book on Functional requirements of buildings other than industrial buildings”, 1987. 									
REFERENCES									
<ol style="list-style-type: none"> Galloe, Salam and Sayigh A.M.M., “Architecture, Comfort and Energy”, Elsevier Science Ltd., Oxford, U.K., 1998. M.Evans- Housing, Climate and Comfort - Architectural Press, London, 1980. B.Givoni, Man, Climate and Architecture, Applied Science, Banking, Essex, 198. Donald Watson and Kenneth Labs., Climatic Design - McGraw Hill BookCompany- New York - 1983. B. Givoni, “Passive and Low Energy Cooling of building”, Van Nortrand Reinhold New York, USA, 1994. 									
e- REFERENCES									
<ol style="list-style-type: none"> http://www.envinst.conu.edu/~envinst/research/built.html www.terin.org/ http://www.pge.com/pec/archives/w98_passi.html http://solstice.crest.org/efficiency/index.shtml 									

SUB CODE			XAR 403			L	T	P	C
SUB NAME			DESIGN OF STRUCTURES – I			3	0	0	3
C	P	A				L	T	P	H
0.6	1.2	1.2				3	0	0	3
UNIT – I ADVANCED CONCRETE STRUCTURES									9
Principles of Pre stressing – Methods of Pre stressing – Materials used – Analysis and Losses of pre stressing, simple problems. Principles of Post tensioning – Methods of Post tensioning – Materials used – Analysis and Losses of Post tensioning, simple problems. Prefabrication of structures – dimension analysis.									
UNIT – II STEEL SECTIONS AND RIVETED, WELDED & BOLTED JOINTS									9
Properties of rolled steel sections, riveted joints, Analysis and Design of riveted joints (Excluding eccentric Connections) Types of welding, permissible stresses, Design of fillet welds (excluding eccentric connections) Design of Bolted connection.									
UNIT –III TENSION MEMBERS									9
Introduction – Net sectional area – permissible stresses. Design of Axially loaded Tension member – Lug angle – code provision – tension splice.									
UNIT –IV COMPRESSION MEMBERS									9
Introduction – various sections – built up section – Design of columns (excluding Lacing, Battening and other connections.)									
UNIT –V DESIGN OF CIRCULAR SLAB AND CONCRETE WALLS									9
Design of concrete walls – Design of cantilever – Cantilever retaining walls – Shear wall. Classification of walls. Design of Simply supported and fixed Circular slabs subjected to uniformly distributed loads									
			LECTURE	TUTORIAL	PRACTICAL	TOTAL			
			45	0	0	45			
TEXT									
1. Ramachandra S., Design of Steel Structures, Standard Book House, Delhi, 1984. 2. "N. Krishna Raju". <i>Design of Prestressed Concrete Structures</i> Tata McGraw-Hill Education, 1986 3. P.Dayarathnam, Design of Reinforced Concrete Structures, Oxford and IBH Publishing Co.,1983									
REFERENCES									
1. National Building Code of India, 1983, Part VI, Structural Design. 2. Gurucharan Singh, Design of Steel Structures, Standard Publishers, New Delhi, 1982. 3. Negi “Design of steel Structures”, Tata McGraw-Hill Book Company, New Delhi 1997. 4. S.S.Bhavikatti “ Design of steel Structures”. I. K. International Pvt Ltd, 2009									

SUB CODE			XAR 404	L	T	P	C
SUB NAME			BUILDING SERVICES – I I	2	0	1	3
C	P	A		L	T	P	H
2.1	0.6	0.3		2	0	1	4
UNIT – I ELECTRICAL SYSTEMS							10
Basics of Electricity, Units of Electricity, Distribution, AC,DC, Single phase, three phase supply, protective devices, earthing, electrical installations, Switches, Loading calculations, Symbols and notations in drawings, power requirement for various appliances, location of installations, Typical electrical layout for residences.							
UNIT – II LIGHTING AND ILLUMINATION							9
Lighting basics, Elements of lighting, units of lighting-luminous flux, luminous intensity, illuminance and luminance, colour temperature, beam angle and field angle, Lighting level for different uses in outdoor and indoor environment. Daylighting – Daylight Considerations for designing with daylight - typology, room dimensions, openings. Daylight Factor.Artificial Lighting -concepts –lighting layers, techniques, Lighting sources-lamps and luminaries, control devices, Case study : Office lighting design.							
UNIT –III ENERGY EFFICIENT LIGHTING							14
Energy efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification & energy efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involving in the above.							
UNIT –IV FUNDAMENTALS OF ACOUSTICS							9
Fundamentals – sound waves, wave length ,frequency, intensity, Octave, , measure of sound, decibel scale, speech and music frequencies, NC curves. Indoor Accoustics -Material property - absorption, reflection, scattering, diffusion, transmission. Absorption co-efficient, NRC. Sound Transmission – Air borne, Structure borne, Sound Transmission Class (STC), Impact Insulation Class (IIC). Understanding acoustic properties of materials, types of acoustic absorbers.							
UNIT –V INDOOR AND ENVIRONMENTAL ACOUSTICS							12
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			30	0	30	60	
TEXT							
1. M.K.Halpeth, T.Senthil kumar, G.Harikumar “Light Right”, TERI publications,2004 2. Jason Livingston, “Designing with light”,Wiley,2014 3. Philips, “Lighting in Architectural Design”, McGraw Hill. New York, 1964							
REFERENCES							
1. Handbook of building Engineers in metric systems, NBO(India), 1968 2. National Building Code of India, 2016 (NBC 2016) 3. Mechanical and Electrical Equipment for buildings, Benjamin Stein, John.S.Reynolds, Walter.T.Grondzik, Alison.G.Kwok, 10th edition, John Wiley and Sons, London, 2006. 4. 'The Lighting Handbook', IES, 2011. 5. R. G. Hopkenson & J. D. Kay, “The lighting of Buildings”, Faber & Faber, London, 1969.							

SUB CODE			XAR 405		L	T	P	C
SUB NAME			MATERIALS AND CONSTRUCTION – III		2	0	2	4
C	P	A			L	T	P	H
1.2	1.2	0.6			2	0	2	5
UNIT – I FERROUS METALS								6
Introduction to Ferrous metals, Types of Ferrous metals, its properties and applications, Manufacturing process by blast furnace, oxygen furnace and production of structural shapes, cast steel, hot rolled, cold rolled steel, Heat treatment of steel, Coated steel.								
UNIT – II STEEL CONSTRUCTION								30
Joining of Steel members, Details of steel framing, Stabilization of steel frames structures, Metal Doors and windows assembly, Steel staircases, Lattice Truss, Beam, Portal Frame and Flat roof Structures, Fire proofing of steel framings. Design and construction parameters developed by INSDAG. Typical Plates: Metal windows, Metal doors, Steel Staircase, Lattice steel roof truss, Tubular Steel roof truss, Steel space frame for flat roof.								
UNIT –III NON FERROUS METALS								5
Introduction to Aluminum, Physical properties, Manufacture of extruded sections and flat products, Finishes for Aluminum, Fabrication process and connections, Introduction to Copper, Manufacture, Grades and Sizes of Copper, Patina and corrosion, protective coatings, Copper alloys: Bronze, Brass. Titanium – Manufacture, Properties and uses, Titanium alloys.								
UNIT –IV CONSTRUCTION USING NON-FERROUS METALS								28
Aluminum doors and windows, Ironmongery, Aluminum glass framing systems, Curtain walls and structural glazing, Exterior wall claddings, Skylights, Interior dry wall partition, False ceiling. Application of gaskets, caulking and sealants. Typical Plates: Aluminium windows, doors, shop front curtain walls, structural glazing systems and aluminium composite panel cladding								
UNIT –V GLASS								6
Introduction to glass, Composition and forming process, Extruded section and cast glass blocks, Types of glass, Strength of glass, Fire resistant glass, Insulation glass, Energy conservation and solar control glass, Acoustic properties of glass. Typical Plates: Showroom glass wall systems, Glass staircase, Balustrade and glass partition systems, installation details of glass.								
			LECTURE	TUTORIAL	PRACTICAL	TOTAL		
			15	0	60	75		
TEXT								
1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India,1997.								
2. W.B.Mckay Building Construction, Longmans, U.K. 1981.								
3. Fundamentals ofBuilding Construction, John Wiley & Sons Inc, 2009.								
4. Materials for Architects and Builders, Elsevier, 2010								

REFERENCES

1. B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 1993.
2. Arthur Lyons - Materials for Architects and Builders - An Introduction - Arnold, London, 1997.
3. Harold B.Olin, Construction Principles Materials and Methods, The Institute of Financial Education, Chicago, 1980.
4. Time Saver Standards for Architectural Design Data, Calendar JH, McGraw-Hill, 1974.
5. Don A. Watson, Construction Materials and processes, McGraw Hill Co., 1972.

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1. <http://www.britmetfed.org.uk/frmedu.html>
2. <http://www.indiabussinessonline.com>
3. <http://www.nrw.as.com>
4. <http://www.arcadiaproducts.com>
5. <http://www.sail.com.in>

SUB CODE			XAROE11	L	T	P	C
SUB NAME			ENTREPRENEURSHIP ESSENTIALS	3	0	0	3
C	P	A		L	T	P	H
				3	0	0	3
Week 1:			Introduction Dhirubhai Ambani & Sofia Myths & Realities about entrepreneurship entrepreneurial qualities Why start-ups fail?				
Week 2:			Mission, vision, entrepreneurial qualities – I Mission, vision, entrepreneurial qualities – II Value proposition Business Model canvas Business model generation				
Week 3:			Competitive advantage Lean start-up – 1 Lean start-up – 2 Team and early recruit Legal forms of business				
Week 4:			Marketing management 1 Marketing management 2 Market research –I Market research –II Market research –Example				
Week 5:			Introduction to financial statements Profit & Loss statement Balance sheet Cash flow Example – 1 Example – 2 Cost-volume-profit & Bread-Even analysis Capital budgeting				

Week 6:	Business plan-I Business plan-II Pitching Go-to-market strategies Does & Don'ts
Week 7:	How to innovate Design Thinking Design-Driven Innovation, Systems thinking Open innovation, TRIZ How to start a start-up?
Week 8:	Government incentives for entrepreneurship (1 lecture) Incubation, acceleration Funding new ventures – bootstrapping, crowd sourcing, angel investors, VCs, debt financing (3), due diligence Legal aspects of business (IPR, GST, Labour law)
Week 9:	Cost, volume, profit and break-even analysis Margin of safety and degree of operating leverage Capital budgeting for comparing projects or opportunities Product costing Product pricing
Week 10:	Funding new ventures – bootstrapping, crowd sourcing, Angel investors, VCs, debt financing (3), and due diligence Incubation and acceleration Government incentives for entrepreneurship Project cost and Financial Closure
Week 11:	Dos & Dons in entrepreneurship Growth Hacking Growth Strategy Legal aspects of business (IPR, GST, Labor law) Negotiation skill
Week 12:	Human Resource management in startups Pivoting Entrepreneurial cases Risk assessment and analysis Strategy management for entrepreneurial ventures Factors driving success and failure of ventures Concluding remarks Assignment, Test
Books and references	
Effective Entrepreneurial Management: Strategy, Planning, RiskManagement, and Organization - Robert D. Hisrich • VelandRamadani, Springer (2017) Entrepreneurship- Theory, Process Practice –by Kuratko &Hodgetts, Thompson South-Western Publication Entrepreneurship –by Robert D. Hisrich (Edition-9)	

SUB CODE			XCSOE2		L	T	P	C
SUB NAME			WEB DESIGN		3	0	0	3
C	P	A			L	T	P	H
					3	0	0	3
UNIT – I HTML								5
Introducing HTML5 – Hello HTML5 – Loose Syntax Returns – XHTML5 – Embracing the Reality of Web Markup – Presentational Markup Removed and Redefined - Document Structure Changes – Adding Semantics – Open Media Effort – Client Side Graphics with <Canvas> - Form Changes – Emerging Elements and Attributes to support web Applications – Internationalization Improvements – HTML5 Meta Changes – Beyond Markup – Major HTML5 Themes								
UNIT – II CSS								
Frames: A glance at a common but deprecated element; advantages and disadvantages; frame and frameset properties. Images: Image types (JPG, GIF, PNG). Image file sizes. Making or finding images. Photoshop for image cropping and sizing. Bringing Styles to Web Pages: Inline, embedded, and external styles. Writing Style Rules: Writing CSS selectors and rules to tie style attributes and values to HTML elements. The cascade: Inheritance, specificity, and the cascade.								
UNIT – III ADVANCED CSS								
Styling text: Font and text properties. Media: Separate style sheets for screen and print. Print Media: Controlling Page Breaks. The Box Model: Styling with content, padding, borders, and margins. Using margins to separate and position. Color: Color and background color. Color coding in hex, percentages, names. CSS positioning: Static, relative, and absolute positioning. Floating: Floated elements and their margins. Styling Links and Lists: Pseudo states and lists within lists. Generating text: "Greeked text" for text-filling—Lorem Ipsum and Cupcake Ipsum.								
UNIT IV – INTRODUCTION TO CONTENT MANAGEMENT SYSTEMS								
Exploring CMS terminology, Open Source revolution, PHP, MySQL, server-side, client-side, static and dynamic HTML website, CMS web pages generation, Website strategy and planning, site mapping content planning								
UNIT V – BUILDING WEBSITES USING JOOMLA								
Install Joomla on a server, Create a site structure, Create menu systems, Layout pages and add content of all types to pages, Link to articles and create special menu items, Use of Joomla Plug-ins, Modules, Components and other extensions, Creation and uses of customized Joomla templates, Modifying templates using CSS and HTML, Adding an exclusive area of a site for visitors.								
				LECTURE	TUTORIAL	PRACTICAL	TOTAL	
				45	0	0	45	

TEXT

1. Eric Meyer on CSS: Mastering the Language of Web Design. 2003. Eric Meyer. New Riders Publishing.
2. A. Thomas Powell, "The complete reference—HTML and CSS (Covers HTML5)" McGraw Hill, Fifth Edition, 2010.
3. Kogent Learning Solutions Inc. "HTML5 Black Book: Covers CSS3, JavaScript, XML, XHTML, Ajax, PHP and JQuery – Black Book", Dreamtech Press, 2011.
4. Kogent Learning Solutions Inc. "Web Technologies: HTML, JavaScript, PHP, Java, JSP, ASP.NET, XML and AJAX, Black Book", Dreamtech Press, 2009.
5. Jennifer Marriott, Elin Waring, "The Official Joomla! Book—2nd Edition", Addison-Wesley Professional, 2012.

REFERENCE

1. BuildYourOwnWebSitetheRightWayUsingHTML&CSS,2ndEditionbyIanLloyd.
2. TheEssentialGuidetoCSSandHTMLWebDesign(Essentials)byCraigGrannel.
3. StephenBurge,"Joomla!@3Explained:YourStep-by-StepGuide",Joomla!Press,2ndEdition,July 2014

E – REFERENCES

1. <https://docs.oracle.com/cd/E19957-01/816-6408-10/contents.htm>
2. http://docs.oracle.com/javase/7/docs/technotes/guides/scripting/programmer_guide/
3. <http://www.w3schools.com/js/default.asp>
4. <https://www.joomla.org/>

SUB CODE			XAROE1A	L	T	P	C
SUB NAME			FOREST AND THEIR MANAGEMENT	3	0	0	3
C	P	A		L	T	P	H
				3	0	0	3
Week 1: Introduction							
Week 2: Basics of silviculture							
Week 3: Forest soils							
Week 4: Forest mensuration							
Week 5: Forest surveying							
Week 6: Forest protection							
Week 7: Silvicultural management - I							
Week 8: Silvicultural management - II							
Week 9: Logging and yield							
Week 10: Silvicultural practices							
Week 11: Newer trends in forestry							
Week 12: Revision							
Assignment, Test							

BOOKS AND REFERENCES

1. Principles and practices of Silviculture by S. S. Bist 2. Forest soils by Wilde

SUB CODE			XAROE1G	L	T	P	C
SUB NAME			THE NINETEENTH CENTURY ENGLISH NOVELS	3	0	0	3
C	P	A		L	T	P	H
				3	0	0	3

Week 1 : Introduction/ Jane Austen's *Persuasion* (1818), Volume I, Chapters 1-6

Week 2 : Jane Austen's Persuasion, Volume I, Chapters 7-12

Week 3 : Jane Austen's Persuasion, Volume II, Chapters 13-18

Week 4 : Jane Austen's Persuasion, Volume II, Chapters 19-24

Week 5 : Charles Dickens' A Tale of Two Cities (1859), Book I, Chapters 1-6, and Book II, Chapters 1-3

Week 6 : Charles Dickens' A Tale of Two Cities, Book II, Chapters 4-12

Week 7 : Charles Dickens' A Tale of Two Cities, Book II, Chapters 13-21

Week 8 : Charles Dickens' A Tale of Two Cities, Book II, Chapters 22-24 and Book III Chapters 1-6

Week 9 : Charles Dickens' A Tale of Two Cities, Book III, Chapters 7-15

Week 10 : R.L.Stevenson A Strange Case of Dr Jekyll and Mr Hyde (1886), Chapters 1-4

Week 11 : R.L.Stevenson A Strange Case of Dr Jekyll and Mr Hyde, Chapters 5-7

Week 12 : R.L.Stevenson A Strange Case of Dr Jekyll and Mr Hyde, Chapters 8-10

Assignment, Test

BOOKS AND REFERENCES

Secondary Reading List: Desire and Domestic Fiction (Nancy Armstrong)The Dialogic Imagination (Mikhail Bakhtin)Reading for the Plot (Peter Brooks)The Novel and the Police (D.A. Miller)The Country and the City (Raymond Williams)

SUB CODE			XAROE1H	L	T	P	C
SUB NAME			LITERATURE , CULTURE AND MEDIA	3	0	0	3
C	P	A		L	T	P	H
				3	0	0	3
Week 1 : Introduction, Aims and Objectives; Defining Literature; Defining Culture; Relationship between Literature and Culture; Literature, Culture and Media							
Week 2 : Introduction to Cultural Studies; Cultural Studies I: Raymond Williams; Cultural Studies II: Stuart Hall; High Culture and Popular Culture; Subculture and Counterculture							
Week 3 : Modernism and Postmodernism I and II; Lyotard's The Postmodern Condition: A Report on Knowledge; Foucault's Notion of Knowledge and Power; Poststructuralism and Deconstruction							
Week 4 : Introduction to Feminism I and II; Theories of Gender; Men's and Masculinity Studies; Queer Studies and Representations of Gender in Media							
Week 5 : Intersectionality; Introduction to Postcolonial Theory; Key Concepts in Postcolonial theory; Said, Spivak and Bhabha; Postcolonial Reading of Achebe and Amitav Ghosh							
Week 6 : Theories of Ideology; Adorno and Horkheimer on Culture; Culture Industry and Mass Deception, Walter Benjamin; Interconnections between Literature, Culture and Identity: Woolf and Deshpande I and II							
Week 7 : The Evolution of Media: Print forms; Media and Culture; Media, Culture and Technology I and II; Harold Innis							
Week 8 : Introduction to Marshall McLuhan; Media and the Electric Age; Hot and Cool Media; Postmodern Media I; Postmodern Media II and Formation of Public Opinion							
Week 9 : Word and the Image: Drama, Photography, Birth of the Cinema; Film and Literature I and II; Language of Films: Mise-en-scene, Type of Shots, Camera angles/movements, Montage; Reading of 12 Years a Slave: Film and Text							
Week 10 : Development of Media: Radio; Development of Media: Television; Film, Television and Literature; Impact of Technology on Literary Genres: Novel; Media in the 21st Century							
Week 11 : Approaches to Digital Forms of Media; Literature, Internet and Culture; Digital Culture, Media, and Literature; Representation of Partition in different Media: A historical and Cultural Analysis I and II							
Week 12 : Game Studies I and II; Body Culture Studies and Representation of Women in the Media; Media and Gender; Media and Language, Glass Ceiling in Media.							
Assignment, Test							
BOOKS AND REFERENCES							
1. Best, Steven and Kellner , Douglas (2012). The Post Modern Turn, New York: The Guilford Press.							
2. Hall, S. (1975). "Encoding and Decoding in the Television Discourse", Education and Culture 6 (Strasbourg: Council of Europe).							
3. Lister, Martin; Dovey, Jon and Giddings, Seth (2008) New Media: A Critical Introduction. New York: Routledge.							
4. Parker, Robert Dale, (2012). Critical Theory: A Reader for Literary and Cultural Studies. U.K.: Oxford University Press.							
5. Raessens, J. (2014) "The ludification of Culture". Fuchs, Mathias; Fizek, Sonia; Ruffino, Paulo, and Schrape, Niklas (eds). Rethinking Gamification. Lüneburg: Meson press. pp. 91-114.							
6. Rivkin, Julie and Michael Ryan (1998) Literary Theory: An Anthology. UK: Blackwell Publishers.							

E-REFERENCES

1. http://nptel.iitm.ac.in
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XAROE1E INTRODUCTION TO FILM STUDIES 3 - 0 - 0 - 3

- | |
|--|
| <ol style="list-style-type: none">1.Cinema and Modernism2.Semiotics of Films3. Realism4. Editing in Cinema5.Film Theory6.Character in cinema7.Plot in Cinema8.Colour Theory and Cinema9.Ideology in Cinema10. Intertextuality and Films11. French new wave12. German Expressionism13.Italian Neo-Realism14. Great European Directors: Jean Renoir15. Luis Bunuel16. Robert Bresson (1907-1999)17.Classic Hollywood18.The Cinema of Orson Welles19.New Hollywood20.Counterculture and cinema21. Auteur Theory: Alfred Hitchcock22. Martin Scorsese23.Michael Mann24.The Cinema of David Cronenberg25.Film Genres26.The Western27. Film Noir28.Gangster Cinema29.Melodrama |
|--|

- 30. Anthology Films
- 31. Films about Media
- 32. Japanese Cinema
- 33. Chinese Cinema
- 34. Representations of Small town in Films
- 35. Representation of City in Cinema
- 36. Film remakes & sequels
- 37. Stardom
- 38. Key Film Texts
- 39. Key Concepts 1
- 40. Key Concepts 2

Assignment, Test

XAROE1J BASICS OF LANGUAGE SCIENCES

3 - 0 - 0 - 3

- Lecture 1** - Introduction of the Course
- Lecture 2** - What is linguistics? What is language? How do we study language?
- Lecture 3** - Language and arbitrariness, and language and dialect
- Lecture 4** - E vs I language, Language as a rule-governed system
- Lecture 5** - Language faculty, Language in human mind
- Lecture 6** - How do we learn language?
- Lecture 7** - Language acquisition
- Lecture 8** - Innateness: Some essential concepts
- Lecture 9** - Structure of language at the level of sounds
- Lecture 10** - Sounds (vocal apparatus)
- Lecture 11** - Places and manners of articulation
- Lecture 12** - Word formation / phonotactic rules
- Lecture 13** - Rules of word formation (singular – plural)
- Lecture 14** - Sentence: An introduction
- Lecture 15** - Making of a sentence (components)
- Lecture 16** - Grammaticality and acceptability
- Lecture 17** - Subject and verb in a sentence
- Lecture 18** - Sentence: Objects and verbs
- Lecture 19** - Phrase structure

Lecture 20 - X-bar theory
Lecture 21 - Specifier and complement
Lecture 22 - Compliments and adjuncts
Lecture 23 - VP components
Lecture 24 - Category selections, Selectional restrictions on verbs
Lecture 25 - Thematic relations
Lecture 26 - Case
Lecture 27 - Morphological and abstract case
Lecture 28 – Structural case
Lecture 29 - Exceptional Case Marking
Lecture 30 - Movement
Lecture 31 - Motivations for movement
Lecture 32 - Questions and movement
Lecture 33 - Passives and NP movement
Lecture 34 - Movement and raising
Lecture 35 – Binding theory and NP interpretations
Lecture 36 - Principles of binding theory
Lecture 37 - Constraints on movements
Lecture 38 - Structure of language and negation
Lecture 39 - Negation and negative polarity items
Lecture 40 - Structure, language, cognition and pragmatics
Lecture 41 - History of generative paradigm in the study of language
Lecture 42 - Language in society, education, and culture

Assignment, Test

Books and references

Government and Binding Theory by Lilian Heageman (Blackwell)

SUB CODE			XCSOE4	3	0	0	3
SUB NAME			MULTIMEDIA DESIGN AND DEVELOPMENT	L	T	P	H
C	P	A		3	0	0	3
3	0	0					
COURSE OUTCOMES				DOMAIN	LEVEL		
CO1	<i>Describe</i> the multimedia application.			Cognitive	Remember		
CO2	<i>Describe, Explain</i> the digital presentation.			Cognitive	Remember, Understand		
CO3	<i>Describe</i> the text and image.			Cognitive	Remember		
CO4	<i>Describe</i> and <i>Explain</i> audio and video technology			Cognitive	Remember , Understand		
CO5	<i>Explain</i> compression and multimedia authoring.			Cognitive	Understand		
UNIT - I INTRODUCTION							9
What is multimedia? Defining the scope of multimedia. Applications of multimedia, hardware and software requirements, multimedia database.							
UNIT - II DIGITAL REPRESENTATION							9
Introduction, Analog representation, waves, digital representation, need for digital representation, A to D conversion, D to A conversion, relation between sampling rate and bit depth, Quantization error, Fourier representation, pulse modulation. Importance and drawback of digital representation.							
UNIT - III TEXT AND IMAGE							9
Introduction, Types of text, Font, insertion, compression, File formats. Types of images, colour models, Basic steps for image processing, principle and working of scanner and digital camera, Gamma and gamma correction.							
UNIT – IV AUDIO AND VIDEO TECHNOLOGY							9
Fundamental characteristics of sound, psycho- 20 acoustics, Raster scanning principles, sensors for TV cameras , color fundamentals, additive and attractive color mixing, Liquid crystal display (LCD), Plasma Display Panel (PDP), file formats							
UNIT – V COMPRESSION AND MULTIMEDIA AUTHORIZING							9
What is compression? Need for compression, Types of compression- basic compression techniques-run length, Huffman’s coding, JPEG, zip coding. Overview of Image and Video compression techniques. Overview, multimedia authoring metaphor, multimedia production, presentation and automatic authoring, Design paradigms and user interface, overview of tools like adobe premier, director, flash and dreamweaver.							
				LECTURE	TUTORIAL	TOTAL	
				45	0	45	
TEXT BOOKS							
1. Principles of Multimedia by Ranjan Parekh. Tata McGraw-Hill Reference: 2 nd Edition 2012.							
2. Multimedia Systems Design by Prabhat K. Andleigh and Kiran Thakrar-PHI publication , 1996							
3. Multimedia systems by John F. Koegal Buford-Pearson Education. 2009							
4. Fundamentals of multimedia by Ze-Nian Li and MS Drew. PHI EEE edition.2008.							
E-REFERENCES							
1. http://www.humber.ca/program/multimedia-design-and-development							

XAROE1D- INTRODUCTION TO COGNITIVE PSYCHOLOGY**3 - 0 - 0 - 3****Topic: Introduction to Cognitive Psychology****Week 1: History, Theory and Research in Human Cognition****Topic: Basic Cognitive Processes****Week 2: Object Perception and Recognition****Week 3: Attentional Processes and cognition****Week 4: Memory Introduction****Week 5: Long Term Memory****Topic: Organizational Knowledge****Week 6: Memory of general knowledge****Week 7: Concept Formation****Week 8: Visual and Spatial Memory****Topic: The Use of Knowledge****Week 9: Human language skills****Week 10: Thought process and Problem Solving****Week 11: Reasoning****Week 12: Decision Making****Assignment, Test****Books and references**

- Kathleen Galotti, Cognitive Psychology, Cengage Learning
- Robert Stenberg, Applied Cognitive Psychology, Cengage Learning
- Bridger Riegler, Cognitive Psychology, Pearson Press
- Stephen Kosslyn, Cognitive Psychology, PHI Press

XAROE1C - NON CONVENMTIONAL ENERGY RESOURCES 3 - 0 - 0 - 3

Week 1 : Scale of quantities, Impact of current energy usage, Conventional sources of energy

Week 2 : Overview of non-conventional energy resources, Consumption by sector

Week 3 : Solar energy incident on earth, solar spectrum

Week 4 : Overview of solar energy technologies, Solar Thermal devices

Week 5 : Solar Photovoltaic devices, Performance and durability of solar devices

Week 6 : Wind energy, technology and geographical aspects

Week 7 : Geothermal and Biomass

Week 8 : Battery basics, types

Week 9 : Testing, performance of batteries

Week 10 : Fuel cell types, Fuel processing, concept to product.

Week 11 : Characterization and durability of fuel cells

Week 12 : Flywheels and super capacitors

Assignment, Test

XAROE1G THE NINETEENTH CENTURY ENGLISH NOVELS 3 - 0 - 0 - 3

Week 1 : Introduction/ Jane Austen's Persuasion (1818), Volume I, Chapters 1-6

Week 2 : Jane Austen's Persuasion, Volume I, Chapters 7-12

Week 3 : Jane Austen's Persuasion, Volume II, Chapters 13-18

Week 4 : Jane Austen's Persuasion, Volume II, Chapters 19-24

Week 5 : Charles Dickens' A Tale of Two Cities (1859), Book I, Chapters 1-6, and Book II, Chapters 1-3

Week 6 : Charles Dickens' A Tale of Two Cities, Book II, Chapters 4-12

Week 7 : Charles Dickens' A Tale of Two Cities, Book II, Chapters 13-21

Week 8 : Charles Dickens' A Tale of Two Cities, Book II, Chapters 22-24 and Book III Chapters 1-6

Week 9 : Charles Dickens' A Tale of Two Cities, Book III, Chapters 7-15

Week 10 : R.L.Stevenson A Strange Case of Dr Jekyll and Mr Hyde (1886), Chapters 1-4

Week 11 : R.L.Stevenson A Strange Case of Dr Jekyll and Mr Hyde, Chapters 5-7

Week 12 : R.L.Stevenson A Strange Case of Dr Jekyll and Mr Hyde, Chapters 8-10

Assignment, Test

Books and references

Secondary Reading List: Desire and Domestic Fiction (Nancy Armstrong)
The Dialogic Imagination (Mikhail Bakhtin)
Reading for the Plot (Peter Brooks)
The Novel and the Police (D.A. Miller)
The Country and the City (Raymond Williams)

XAROE1F - ENGLISH LANGUAGE FOR COMPETITIVE EXAM**3 - 0 - 0 - 3**

- Introduction/Practice Tests
2. Advanced Grammar
3. **Advanced Grammar for Competitive Exams**
4. **Advanced Vocabulary for Competitive Exams**
5. **Advanced Vocabulary**
6. **Advanced Reading for Competitive Exams**
7. **Advanced Reading for Competitive Exams**
8. **Advanced Writing for Competitive Exams**
9. Conclusion **Assignment, Test**

XAROE1B -PSYCHOLOGY OF STRESS, HEALTH AND WELL BEING**3 - 0 - 0 - 3**

- Week 1: Stress, health and well-being:** Overview; Nature and physiology of stress
- Week 2: Stress, trauma and health:** Mind-body connections; Stress and non-infectious diseases; Stress and infectious diseases; Stress and psychological disorder
- Week 3: Positive aspects of stress and trauma:** Stress, trauma and posttraumatic growth; Factors influencing stress tolerance
- Week 4: Coping processes and strategies 1 :** Types of coping strategies; Coping strategies of limited value; Unconscious mind and defensive coping; **Characteristics of constructive coping; physical ways of coping**
- Week 5: Coping processes and strategies 2:** Mind-body strategies; Mental ways of coping; Coping with social support and meaning in life; Mindfulness and acceptance
- Week 6: Beyond stress and recovery:** Positive mental health and well-being
- Week 7: Psychology of happiness:** What is happiness? What makes us happy? Socio-economic factors and happiness; Positive emotions
- Week 8: Can we become happier?** Genetic set-point and hedonic adaptation; Sustainable happiness model and intentional activities
- Week 9: Happiness Activities 1:** Expressing gratitude and positive thinking; Love and

kindness; Avoiding overthinking and social comparison

Week 10: Happiness Activities 2: Identifying signature strengths; Achieving happiness with “Flow”.

Week 11: Is happiness sufficient? The concept of eudaimonic well-being; Self-determination and motivation

Week 12: Meaning and purpose in life: The concept of meaning in life and logotherapy;
Life goals.

Assignment, Test

Books and references

1. W. Weiten, and M. A. Lloyd, Psychology Applied to Modern Life: Adjustment in the 21st Century, Wadsworth Publishing, 2007
2. R. Harington, Stress, Health and well-being: Thriving in the 21st century, Wadsworth Publishing, 2013.
3. I. Boniwell, Positive psychology in a nutshell, McGraw-Hill Education, 2012.
4. S. Lyubomirsky, The how of happiness, Penguin Press, 2008.

SUB CODE			XAR 407	L	T	P	C
SUB NAME			ARCHITECTURAL DESIGN – III	0	0	6	9
C	P	A		L	T	P	H
2	4	3		0	0	6	12
UNIT – I DESIGN STUDIO							70
<p>Problem related to multi room, single use, small span - multiple story, Horizontal and vertical movement, Active cum passive energy, conventional and frame type buildings.</p> <p>Examples: Department store, Library, higher secondary school, campus students' centre, etc.</p> <p>The projects will consciously provide for movement and use by the physically handicapped and elderly.</p>							
UNIT – II DESIGN STUDIO - RURAL PROJECT							110
<p>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 –identifying the need and demand of the society - preparation of design solutions for housing and community facilities.</p>							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			0	0	180	180	
TEXT							
1. Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. - 2002							
REFERENCES							
<p>1. De Chiara and Callender, Time Saver Standard for Building Types, McGraw-Hill Co., 2nd Edition, 1980.</p> <p>2. P&D Act 1995.</p> <p>3. Edward D.Mills, Planning - The Architects Handbook - 10th Edition, British Library Cataloguing in Publication Data, 1985.</p> <p>4. AndrewAlpern, Handbook of Speciality Elements in Architecture, McGraw-Hill Book Co., 1982.</p> <p>6. Neufert Architect's Data, Rudolf Herg, Crosby Lockwood and Sons Ltd., 1970.</p>							

SUB CODE			XAR 501	L	T	P	C
SUB NAME			DESIGN OF STRUCTURES – II	3	0	0	3
C	P	A	0.6:1.8:0.6	L	T	P	H
0.6	1.8	0.6		3	0	0	3
UNIT – I ADVANCED CONCRETE STRUCTURES							9
Principles of Pre stressing – Methods of Pre stressing – Materials used – Analysis and Losses of pre stressing, simple problems. Principles of Post tensioning – Methods of Post tensioning – Materials used – Analysis and Losses of Post tensioning, simple problems. Prefabrication of structures – dimension analysis.							
UNIT – II SHELLS & FOLDED PLATES							7
Introduction of shells and folded plates – Classification of shells – Structural action of shells and Folded plates – space frames – Design concept only.							
UNIT – III STEEL SECTIONS AND RIVETED, WELDED & BOLTED JOINTS							8
Properties of rolled steel sections, riveted joints, Analysis and Design of riveted joints (Excluding eccentric Connections) Types of welding, permissible stresses, Design of fillet welds (excluding eccentric connections) Design of Bolted connection							
UNIT – IV STEEL BEAMS AND COLUMNS							11
Steel beams: Allowable stresses, General specifications, Design of laterally supported beams. Steel Columns: Allowable stresses, various shapes, built-up sections, Design of columns (excluding built – up columns lacing, battening and other connections).							
UNIT – V STRUCTURAL DESIGN							10
Analysis and design of structural members for residential or commercial buildings.							
							TOTAL 45
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT							
1. Ramachandra S., Design of Steel Structures, Standard Book House, Delhi, 1984. 2. A.S.Arya, Structural Design in Steel, Masonry and Timber, Nemchand and Bros, Roorkee 1971. 3. P.Dayarathnam, Design of Reinforced Concrete Structures, Oxford and IBH Publications Co.,1983. 4. N.C.Sinha and S.K.Roy, Fundamentals of Reinforced Concrete, S.Chand& co., New Delhi 1983.							
REFERENCES							
4. National Building Code of India, 1983, Part VI, Structural Design. 5. Gurucharan Singh, Design of Steel Structures, Standard Publishers, New Delhi, 1982. 6. Negi “Design of steel Structures”, Tata McGraw-Hill Book Company, New Delhi 1997.							

SUB CODE			XAR502	L	T	P	C
SUB NAME			CONTEMPORARY ARCHITECTURE -I	3	0	0	3
C	P	A		L	T	P	H
1.5	0	1.5		3	0	0	3
UNIT -I CRITIQUING MODERNISM							6
Writings of Venturi - Jane Jacobs -- Christopher Alexander.							
UNIT -II AFTER MODERNISM							12
Post-Modernist Architecture - Historic Revivalism – Critical Regionalism - Deconstructive Theory and Practice.works of zahaHadid, Peter Eissenmen, Daniel Libiskind, Coop Himmelblau.							
UNIT -III ALTERNATIVE PRACTICES							12
Ideas and selected Works of - Fathy - Baker - Ando - Soleri - Bawa.							
UNIT - IV ARCHITECTURE IN COLONIAL INDIA							6
Colonialism and its impact - Early British Neo-classical Architecture - Indo-Sarcenic rchitecture and the Works of Chisholm - P.W.D. and the Institutionalization of Architecture – architecture and planning of New Delhi							
UNIT - V POST-INDEPENDENT ARCHITECTURE IN INDIA							9
Influence of Corbusier and Louis khan on Indian architects, Housing and the issues of Appropriate Technology-Architecture in the Horizon. Adaptations of modern architecture in Indian context, Chandigarh, le corb, and khan, works in India Works and ideas: Nari Gandhi - Doshi - Kanvinde– Correa							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT							
1. Bill Risebero, Modern Architecture and Design.							
2. Kenneth Frampton, Modern Architecture: A Critical History, Tahmes and Hudson, London, 1994.							
3. Leonardo Benevolo, “History of Modern Architecture”, 2 Vols., reprint, MIT Press, 1977.							
REFERENCES							
1. Thomas Metcalf, An Imperial Vision, Faber and Faber, London, 1989.							
2. ManfredoTaferi / Franceso dal co., Modern Architecture, Faber and Faber/Electa,1980.							
3. SigfriedGiedion, Space Time and Architecture: The Growth of a New Tradition, Havard University Press, 1978.							

SUB CODE			XAR 503		L	T	P	C
SUB NAME			CULTURE AND ARCHITECTURE		2	0	0	2
C	P	A			L	T	P	H
2	0	0			2	0	0	2
UNIT – I INTRODUCTION								4
History of civilizations - Evolution of first societies - Relationship between man, nature and built forms - Built forms as expressions of culture.								
UNIT - II RELATIONSHIP BETWEEN MAN, NATURE AND SOCIETY								5
Introduction to Sociology, an overview of Social Institutions Underlying values of relationships between Man, Nature and Society. Role of Family structure, privacy, religion and occupation, status of women etc. Settlements and its locations- river banks, valleys, fertile soils.								
UNIT - III ROLE OF CULTURE IN ARCHITECTURE								6
Introduction to culture and architecture. Relationship between culture and climate. Effect of socio – cultural factors in architecture. Impact of tangible and non-tangible elements on spatial design.								
UNIT - IV ANTHROPOLOGY OF TRADITIONAL ARCHITECTURE								7
Architecture as a Process – kinship and house societies – perceptions of built form – conceptions of space – symbolism and technology – study of the above through case study of traditional architecture in India								
UNIT - V ALTERNATE THEORIES OF HOUSE FORM								8
Evolution of built forms - influencing factors. Constraining and determining factors – Climate, material resources, construction and technology, site, defense, economics, religion, symbols and meanings.								
				LECTURE	TUTORIAL	PRACTICAL	TOTAL	
				30	0	0	30	
TEXT								
1. Amos Rapoport, “ House Form and Culture”, 1969. 2. Amos Rapoport, “Culture, Architecture and Design”, 2005								
REFERENCES								
1. Amos Rapoport, “The meaning of the Built Environment”, 1982. 2. Paul Oliver, Encyclopedia of Vernacular Architecture of the world, Cambridge University Press, 1997. 3. Paul Oliver’s “Built to meet needs - Cultural Issues in Vernacular Architecture”, 2006								

SUB CODE			XAR 504		L	T	P	C
SUB NAME			SITE PLANNING AND SURVEYING		1	0	1	2
C	P	A			L	T	P	H
0.8	0.4	0.8			1	0	2	3
UNIT – I INTRODUCTION TO SURVEY AND SURVEYING TECHNIQUES								9
Definition of plot, site, land and region, units of measurements, reconnaissance, and need for surveying. Chain survey and compass survey - Plane Table and Theodolite, total station surveys - various equipments used – simple field surveys.								
UNIT II SITE ANALYSIS								10
Importance of site analysis - factors involved – 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;								
UNIT III SITE ANALYSIS TECHNIQUES								10
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 – Architectural and visual aspects								
UNIT IV SITE PLANNING AND LAYOUT PRICIPLES								10
Context of the site. Preparation of site plan drawing – incorporation of site analysis factors, Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, road widths and parking, regulations. Turning radii & street intersections								
UNIT V ENVIRONMENTAL FACTORS								6
Man-made structures, sensuous qualities, cultural data, images and data correlation - vegetation – plant associations, types and distribution - preparation of ecological profile for an area, basic understanding of agencies related to environmental regulations.								
			LECTURE	TUTORIAL	PRACTICAL	TOTAL		
			15	0	30	45		
TEXT								
1. W.M. Marsh - Landscape Planning, John Wilay & Sons, USA 1983.								
2. B.C.Punmia - Surveying Vol.I - Standard Book House, New Delhi - 1983.								
REFERENCES								
1. Kevin Lynch - Site planning - MIT Press, Cambridge, MA - 1967.								
2. Edward. T. Q., “Site Analysis”, Architectural Media, 1983.								
3. P.B.Shahani - Text of surveying Vol. I, Oxford and IBH Publishing Co - 1980								
4. Joseph De.Chiarra and Lee Coppleman - Planning Design Criteria - Van Nostrand Reinhold Co.,New York - 1968.								
5. Beer R, Environmental Planning for Site development, Turner, Landscape Planning and environmental impact design.								

SUB CODE			XAR 505	L	T	P	C
SUB NAME			MATERIALS AND CONSTRUCTION - V	2	0	3	3
C	P	A		L	T	P	H
1	1	1		2	0	3	5
UNIT – I DAMP AND WATER PROOFING							15
Damp proofing materials - Asphalt, Bentonite clays, butyl rubber, silicones, vinyls, Epoxy resins and metallic sheets - properties, uses. Water proofing materials - rug, asbestos, glass, felt - plastic and synthetic rubber -vinyls, butyl rubber, neoprene polyvinyl chloride (PVC) prefabricated membranes - sheet lead, asphalt - properties and uses, Expanded polystyrene roof insulation and extruded polystyrene foam insulation. Application of the above under various situations - basement floors, swimming pools, terraces, etc – plates and assignments							
UNIT -II THERMAL INSULATION							15
Heat transfer – Heat gain and heat loss by materials – Types of insulation materials - vapour barriers and rigid insulation. Blanket, poured and reflective insulation - properties and uses of fibre glass, foamed glass, cork, vegetable fibres, mineral fibres, foamed plastics and vermiculite. Gypsum - manufacture, properties and uses, plaster of paris and anhydride gypsum. Foam based insulation. Internal wall insulation and EFIS – External façade insulation system. Construction details of the material application of floors, walls and roofs – Cold storages- Detailing for physically handicapped.							
UNIT - III ACOUSTIC INSULATION							15
Porous, Baffle and perforated materials such as plastic, acoustic tiles, wood, particle board, fibre board, cork, quilts and mats - Brief study on properties and uses of the above - current developments.							
UNIT - IV FLOOR AND WALL COVERINGS							15
Floor coverings - flooring - softwood, hardwood - Resilient flooring -Linolium, Asphalt tile, vinyl, rubber, cork tiles - terrazzo - properties, uses and laying. Wall coverings - cement fiber board's Porcelain, enameled metal, wood veneer, Vinyl, plastic surfaced paneling - properties, uses and laying. Wall and floor tiles - Ceramic glazed, mosaic, quarry and cement tiles - properties, uses and laying. Timber flooring. Details of wet and Dry wall cladding system. Detailing for physically handicapped. Calculation of materials for selected wall and floor coverings.							
UNIT - V PROTECTIVE AND DECORATIVE COATINGS							15
Preparation of wall for painting, Putty,Paints- Enamels, distempers, plastic emulsions, cement based paints - properties, uses and applications - Painting on different surfaces - defects in painting. Clear coatings and strains - Varnishes, Lacquer, , Wax Polish and Strains - Properties, uses and applications.Special purpose paints - Bituminous, Luminous, fire retardant and resisting paints - properties, uses and applications. Calculation of quantity of paints for selected projects							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			30	-	30	60	
TEXT							
1. S.C.Rangwala, Building Construction (Sixteenth Edition) Charotar Publishing House, Anand, India, 1997.							
2. Jack M.Launders, Construction Materials, Methods, careers pub., J.Holland, Illinois Wileox Co., Inc. 1983.							
3. W.B. Mckay, Building construction, Longman, U.K. 1921							
REFERENCES							
1. Arthur R.Llons, Materials for architects and builders An introduction, Holder Headline group, Great Britain, 1997.							

2. Don.A.Watson, Construction Materials and Processes, McGraw Hill Book Co., 1972

SUB CODE			XAR 506	L	T	P	C
SUB NAME			DIGITAL DESIGN AND MEDIA TOOLS	0	0	2	2
C	P	A		L	T	P	H
1	1	1		0	0	4	4
UNIT – I INTRODUCTION TO COMPUTER AND IMAGE EDITING							10
Windows Digital Art, poster designing, book cover design, card designing exercise. Basic Tools for Editing and Creating Graphics. Basics of photography to understand the documentation of buildings through digital media. Image doctoring and manipulation using computer software for graphics and animation (Photoshop and Flash)							
UNIT II BASICS OF BUILDING MODELLING							20
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, Understanding the drawing unit’s settings, scales, limits, drawing tools, drawing objects, object editing, and text, are dimensioning. Transparent overlays, hatching utilities, line type, line weight and color. Multiline, Polyline, etc. Styles, blocks and symbol library.							
UNIT III INTRODUCTION TO 3D MODELLING							15
Project: Create 3D sculpture using 3D primitives (cubes, spheres etc.) Tools: Slide facilities script attributes, V-port, editing session. Introduction to 3D-modelling technique and construction planes, drawing objects, 3D surfaces setting up elevation thickness and use of dynamic projections. Solid modeling with primitive command and Boolean operation. Photoshop for architectural rendering of plans, elevation, section.views. Sketching in photoshop, sketch pad.							
UNIT IV 3D RENDERING AND SETTING							15
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. 3D modelling softwares like sketch up, Autocad rivet, etc Typography & Calligraphy. Photoshop and flash for conceptual presentation technique. Basic movie camera shooting, traditional analog and digital methods, conversion of analog to digital, memory manipulation and software compatibility exercises.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			0	0	60	60	

SUB CODE			XAR 507			L	T	P	C
SUB NAME			ARCHITECTURAL DESIGN - IV			0	0	6	6
C	P	A				L	T	P	H
1.2	2.4	2.4				0	0	12	12
UNIT – I DESIGN STUDIO									180
Solar Passive Design Small complexes - involving building technology - Design and detailing for movement of physically handicapped and elderly persons within and around buildings. Examples: The building project should be of low services complexity largely relying on passive design strategies and natural systems of lighting and ventilation. Shopping centers (Commercial) Home for aged, apartments (residential) Health centers, Nursing homes (institutional) Etc. Introduction to three-dimensional modeling of spaces using Computer. Construction and manipulation of three-dimensional building databases, Rendering 3D images and Presentation techniques.									
			LECTURE	TUTORIAL	PRACTICAL	TOTAL			
			0	0	180	180			
TEXT									
1. Ed.By.Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. - 2002 2. De Chiara Callender, Time Saver Standard for Building Types, McGraw-Hills Co., 1973.									
REFERENCES									
1. Edward D.Mills, Planning, 4 volumes, Newnes, Butterworths, London, 1976. 2. P&D Act 1995. 3. E and O.E. Planning. Liffie Books Ltd., London, 1973. 4. National Building Code and Bureau of Indian standard publications.									

SUB CODE			XAR601	L	T	P	C
SUB NAME			HUMAN SETTLEMENTS PLANNING	3	0	0	3
C	P	A		L	T	P	H
2.4	0	0.6		3	0	0	3
UNIT – I INTRODUCTION TO HUMAN SETTLEMENTS							8
Elements of human settlement. Forms of human settlement, Growth factors of human settlement – functions, linkages, networks. Anatomy & classification of human settlements. Characteristics of human settlement at various phases of its growth stage.							
UNIT-II INTRODUCTION TO PLANNING AND PLANNING CONCEPTS							10
Evolution of planning profession, role and scope of a planner, planning in history – town planning in ancient India, Greek, roman and medieval. Urban forms and pattern. Planning concepts proposed by Ebenezer Howard, Patric Geddes, Lewis Mumford, CA Perry, le Corbusier. Writings of Jane Jacobs							
UNIT - III COMPONENTS OF PLANNING							12
Various aspects of planning - Land use planning, transportation planning, environmental planning, infrastructure planning. The fundamentals of the land use planning, Zoning principles and basis for formation of zoning laws. Growth management system, infrastructure (Infrastructure, Road, Water supply, Sanitation, Solid Waste Disposal) development and maintenance - Forecasting infrastructure needs of the town based on set of parameters such as population and size of the city, growth trend. Development Control Regulations and bye-laws, standards, CZR in India. Critical analysis of standards. ICT in city management.							
UNIT - IV URBAN PLANNING AND URBAN RENEWAL							10
Tools and techniques utilized at the local, regional, and state level –master plan, structure plan, and zonal plan. Local Governance and Administration: Objectives, Functions, Responsibilities and Organizational structure of: (i) Village Panchayats (ii) Municipalities (iii) Corporations and (iv) Urban Development Authorities. Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation and Conservation – Govt. schemes – case studies .							
UNIT - V CITIES -PARADIGM OF SOCIO POLITICAL EXPRESSION							5
Self sustained communities – SEZ – transit development – integrated townships – case studies . Cities as symbolic expressions of power – Chandigarh, Delhi, Bhubaneshwar, Brasilia, Regulations and standards in India. Critical analysis of standards.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			45	0	0	45	
TEXT BOOKS:							
1. Gallion Arthur B & Eisner Simon, The Urban Pattern: City Planning and Housing.							
2. UDPFI guidelines							
3. <i>Town and Country Planning Act 1971 with amendments</i>							
4. John Radcliffe, An Introduction to Town and Country Planning.							
REFERENCES							
1. C.L. Doxiadis, Ekistics, “An Introduction to the Science of Human Settlements”, Hutchinson, London, 1968.							
2. Government of India, “Report of the National Commission on Urbanisation”, 1988.							
3. Andro D. Thomas, “Housing and Urban Renewal”, George Allen and Unwin, Sydney, 1986.							
4. Rodwin, Lloyd, ed., 1987. Shelter, Settlements and Development (Hemel Hempstead, United Kingdom, Unwin Hyman Ltd.)							
5. Town and country planning Act 1971 with amendments							

SUB CODE			XAR 602			L	T	P	C
SUB NAME			VERNACULAR ARCHITECTURE			3	0	0	3
C	P	A				L	T	P	H
2.5	0.5	0				3	0	0	3
UNIT – I INTRODUCTION									6
Definition and classification of Vernacular architecture – Vernacular architecture as a process – Survey and study of vernacular architecture: methodology- Cultural and contextual responsiveness of vernacular architecture: an overview									
UNIT – II APPROACHES AND CONCEPTS									9
Different approaches and concepts to the study of vernacular architecture: an over view – Aesthetic, Architectural and anthropological studies in detail.									
UNIT – III VERNACULAR ARCHITECTURE OF THE WESTERN AND NORTHERN REGIONS OF INDIA									12
Forms spatial planning, cultural aspects, symbolism, colour, art, materials of construction and construction technique of the vernacular architecture of the following: - Deserts of Kutch and Rajasthan; Havelis of Rajasthan - Rural and urban Gujarat; wooden mansions (havelis); Havelis of the Bohra Muslims - Geographical regions of Kashmir; house boats.									
UNIT – IV VERNACULAR ARCHITECTURE OF SOUTH INDIA									8
Forms, spatial planning, cultural aspects, symbolism, art, colour, materials of construction and construction technique, proportioning systems, religious beliefs and practices in the vernacular architecture of the following: - Kerala: Houses of the Nair & Namboothri community; Koothambalam, Padmanabhapuram palace. - Tamil Nadu: Houses and palaces of the Chettinad region; Agraharams.									
UNIT – V WESTERN INFLUENCES ON VERNACULAR ARCHITECTURE OF INDIA									10
Colonial influences on the Tradition Goan house - Evolution of the Bungalow from the traditional bangla, Victoria Villas – Planning principles and materials and methods of construction. Settlement pattern and house typologies in Pondicherry and Cochin.									
					LECTURE	TUTORIAL	PRACTICAL	TOTAL	
					30	0	15	45	
TEXT									
1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.									
2. Amos Rapoport, House, Form & Culture, Prentice Hall Inc. 1969.									
3. R W Brunskill: Illustrated Handbook on Vernacular Architecture, 1987.									
REFERENCES									
1. V.S. Prammar, Haveli – Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.									
2. Kulbushanshan Jain and Minakshi Jain – Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad 1992. 63									
3. G.H.R. Tillotsum – The tradition of Indian Architecture Continuity, Controversy – Change since 1850, Oxford University Press, Delhi, 1989.									
4. Carmen Kagal, VISTARA – TheArchitecture of India, Pub: The Festival of India, 1986.									
5. S. Muthiah and others: The Chettiar Heritage; Chettiar Heritage 2000									

SUB CODE			XAR603	L	T	P	C
SUB NAME			ESTIMATION AND COSTING	2	0	0	2
C	P	A		L	T	P	H
1.875	0.375	0.75		2	0	0	2
UNIT- I INTRODUCTION TO ESTIMATION							3
Definition, Aim and object, Scope and importance of subject. Types of Estimates - Approximate and detailed. Units of measurement for different items.							
UNIT- II METHODS OF ESTIMATION							6
Methods of Approximate Estimating - Built up or Carpet Area Method, Cubic Contents, Method and Numbers System, Current rates in industry for Approximate Estimating. Detailed Estimate on item rate basis - Quantities and Abstract of Estimate, Bill of Quantities of a Tender, Contingencies							
UNIT- III COST ESTIMATION							8
Preparation of data and analysis of Rates for Civil Work items – as per Municipal or P. W. D. Schedule Rates and Current market rates, Units for rates. Taking of Quantities for Civil Work of Load Bearing Wall structure and preparation of abstract. Taking of Quantities of Civil Works of R. C. C. Frame Building, and preparation of abstract.							
UNIT – IV RATE ANALYSIS							8
Analysis of rates – using standard data and schedule of rates for conventional items – principles of pricing for new items.							
UNIT – V VALUATION							5
Necessity – basics of valuation – capitalized value – depreciation – escalation – value of property – calculation of Standard rent – Report preparation.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			30	0	0	30	
TEXT							
1. S.C. Rangwala, Elements of Estimating and Costing, Charoter Publishing House, India.							
REFERENCES							
1. Dutta, Estimating and Costing, S.Dutta and Co., Lucknow							
2. W.H.King and D.M.R.Esson, Specification and Quantities for Civil Engineers, The English University Press Ltd.							
3. T.N.Building Practice, Vol.1, Civil, Govt. Publication.							
4. P.W.D. Standard specifications, Govt. Publication.							

SUB CODE			XAR 604	L	T	P	C
SUB NAME			ENERGY EFFICIENT ARCHITECTURE	1	0	1	2
C	P	A		L	T	P	H
1.33	0.66	0		1	0	2	3
UNIT – I PASSIVE DESIGN							10
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 ADVANCED PASSIVE ARCHITECTURE- PASSIVE HEATING							10
Direct Gain Thermal Storage of Wall and Roof - Roof Radiation Trap - Solarium - Isolated Gain.							
UNIT – III PASSIVE COOLING							10
Evaporative Cooling - Nocturnal Radiation cooling - Passive Desiccant Cooling – Induced Ventilation - Earth Sheltering - Wind Tower - Earth Air Tunnels							
UNIT – IV DAY LIGHTING AND NATURAL VENTILATION							8
Daylight Factor - Daylight Analysis - Daylight and Shading Devices - Types of Ventilation - Ventilation and Building Design.							
UNIT – V CONTEMPORARY AND FUTURE TRENDS							7
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.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			15	0	30	45	
TEXT							
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 Press, 2000. 4. Givoni .B, “Passive and Low Energy Cooling of Buildings”, Van Nostrand Reinhold, New York, 1994							
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. Patrick Waterfield, “The Energy Efficient Home: A Complete Guide”, Crowood press ltd, 2011. 4. Dean Hawkes, “Energy Efficient Buildings: Architecture, Engineering and Environment”, W.W. Norton & Company, 2002 5. David Johnson, Scott Gibson, “Green from the Ground Up: Sustainable, Healthy and Energy efficient home construction”, Taunton Press, 2008							

SUB CODE			XAR605	L	T	P	C
SUB NAME			MATERIALS AND CONTRUCTION - VI	1	0	2	3
C	P	A		L	T	P	H
2.4	0	0.6		1	0	4	5
UNIT – I CONSTRUCTION SYSTEMS DEVELOPED BY RESEARCH ORGANISATION							6
Study of construction system innovated through research organizations like CBRI, NBO, SERC, etc. Floor, wall and roofing systems. Ferrocement its properties, uses and application in building construction including the techniques of preparation, casting, curing, etc.							
UNIT – II FOUNDATIONS							30
Pile foundation, different types of piles, precast and cast insitu with reinforcement details for different types of grids, details of pile capping, jointing of precast piles and columns.							
UNIT-III VERTICAL MOVEMENT EQUIPMENTS IN BUILDINGS							5
Elevators - Historical development of elevators or lifts. Elevators - size, capacity, speed, mechanical safety method, positioning of core under planning grid. Types of elevators - Electric, hydraulic - passenger, hospital, capsule, freight, etc. Dumb waiters, details of lift shaft and other mechanism. Detailing and fitting for physically handicapped. Regenerative drives – speed convertors. Fire lift tower – solea							
UNIT – IV ESCALATORS AND CONVEYORS							28
Escalator types - Parallel and criss cross escalators, horizontal belt conveyors, horizontal moving walkways - concern for physically handicapped mechanical safety systems and automatic control. Speed convertors – cables – sky lobby. Elevator Research							
UNIT – V MISCELLANEOUS STRUCTURES							6
Shell structures, domes, space frame, shell barrel vault, folded plate structures, tensile structures, pneumatic structures, and etc							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL	
			15	0	60	75	
TEXT							
1. J.H. Callender, Time Saver Standard for Architectural Design Data, McGraw- Hill, 1994. 2. James Ambrose, Building Construction, Service Systems, Van No strand Reinhold, New York, 1992.							
REFERENCES							
1. H.A Thiruvananthapuram – Hand Book on Elevators – Printing and Publishing co – 1997. 2. United Technologies –OTIS – Tell me About Escalators – Printed in USA – 1990. 3.Pamphets supplied and other literatures from N.B.O., SERC, CBRI, 1970 onwards. 4.R..Chudley, Construction Technology, Richard Clay (Chaucer Press) Ltd., Suffolk, 1978.							

SUB CODE	XAR605	L	T	P	C
SUB NAME	MATERIALS AND CONTRUCTION - VI	1	0	2	3
C:P:A	2.4:0:0.6	L	T	P	H
		1	0	4	5
UNIT – I CONSTRUCTION SYSTEMS DEVELOPED BY RESEARCH ORGANISATION					6
Study of construction system innovated through research organizations like CBRI, NBO, SERC, etc. Floor, wall and roofing systems. Ferrocement its properties, uses and application in building construction including the techniques of preparation, casting, curing, etc.					
UNIT – II FOUNDATIONS					30
Pile foundation, different types of piles, precast and cast insitu with reinforcement details for different types of grids, details of pile capping, jointing of precast piles and columns.					
UNIT-III VERTICAL MOVEMENT EQUIPMENTS IN BUILDINGS					5
Elevators - Historical development of elevators or lifts. Elevators - size, capacity, speed, mechanical safety method, positioning of core under planning grid. Types of elevators - Electric, hydraulic - passenger, hospital, capsule, freight, etc. Dumb waiters, details of lift shaft and other mechanism. Detailing and fitting for physically handicapped. Regenerative drives – speed convertors. Fire lift tower – solea					
UNIT – IV ESCALATORS AND CONVEYORS					28
Escalator types - Parallel and criss cross escalators, horizontal belt conveyors, horizontal moving walkways - concern for physically handicapped mechanical safety systems and automatic control. Speed convertors – cables – sky lobby. Elevator Research					
UNIT – V MISCELLANEOUS STRUCTURES					6
Shell structures, domes, space frame, shell barrel vault, folded plate structures, tensile structures, pneumatic structures, and etc					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	15	0	60	75	
TEXT					
1. J.H. Callender, Time Saver Standard for Architectural Design Data, McGraw- Hill, 1994. 2. James Ambrose, Building Construction, Service Systems, Van No strand Reinhold, New York, 1992.					
REFERENCES					
1. H.A Thiruvananthapuram – Hand Book on Elevators – Printing and Publishing co – 1997. 2. United Technologies –OTIS – Tell me About Escalators – Printed in USA – 1990. 3.Pamphets supplied and other literatures from N.B.O., SERC, CBRI, 1970 onwards. 4.R..Chudley, Construction Technology, Richard Clay (Chaucer Press) Ltd., Suffolk, 1978.					

SUB CODE	XAR 606	L	T	P	C
SUB NAME	ARCHITECTURAL WORKING DRAWING	0	0	2	2
C:P:A	1:0.5:0.5				
		L	T	P	H
		0	0	4	4
ARCHITECTURAL WORKING DRAWING					45
RIBA stages of work, Tender documentation, Structure of Information, Primary structuring and secondary structuring of Working drawing, drawing numbering systems. Construction drawings of allied discipline – structural, Mechanical ,electrical and Plumbing.Preparation of Working drawing for a residential, commercial project - Foundation plans, Centre line plans,					

all floor plans, Elevations and Sections, Door window schedules, Part Wall Sections, Blown up details, Staircase details, Kitchen details, Toilet and Bath details, approval drawing.

SPECIFICATION WRITING 15

Necessity of specification, importance of specification, - How to write specification, - Types of Specification, -Principles of Specification writing, - Important aspects of the design of specification – sources of information – Classification of Specification. Detailed specification for earthwork excavation, plain cement concrete, Reinforced concrete, first class and second class brickwork, Damp proof course, ceramic tiles/marble flooring and dadoo, woodwork for doors, windows frames and shutters, cement plastering, painting & weathering course in terrace.

Specification writing of simple residential building & commercial building.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	60	60

TEXT

1. The Professional Practice Of Architectural Working Drawings, Osamu A. Wakita; Richard M. Linde, Wiley 2002.

REFERENCES

1. Working Drawing Handbook, Keith Sykes, Architectural Press 1995

SUB CODE	XAR607	L	T	P	C
SUB NAME	ARCHITECTURAL DESIGN - V	0	0	12	6
C:P:A	1.5:1.5:3	L	T	P	H
		0	0	12	12

UNIT – I DESIGN STUDIO 180

Design of large structures - Multiuse, multispans, multilevel - building types involving technology and services – Concentrating in the interior designing - Design and detailing for movement and use by physically challenged people within and around building. Design of green and sustainable buildings. **Examples:** College, office buildings (Institutional) Large Commercial Complex (Commercial) Resorts (Recreational) - Mixed Residential Developments (Residential) etc.

Working drawings for any one design Using Computer for presentation Skills.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	180	180

TEXT

1. Ed.By.Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. – 2002
2. DeChiara Callender, Time Saver Standard for Building Types, McGraw-Hills 1973.

REFERENCES

1. Edward D.Mills, Planning, 4 volumes, Newnes, Butterworths, London, 1976.
2. P&D Act 1995.
3. E and O.E. Planning. Liffie Books Ltd., London, 1973.
4. National Building Code and Bureau of Indian standard publications

SUB CODE	XAR 701	L	T	P	C
SUB NAME	URBAN ECONOMICS & SOCIOLOGY	2	0	0	2
C:P:A	1:1:3	L	T	P	H
		2	0	0	2
UNIT – I ROLE OF URBAN ECONOMICS &SOCIOLOGY					5
Subject matter of Economics and Sociology as related to built environment.					
UNIT – II URBAN ECONOMICS					6
Principles of consumption, production and distribution and their relevance’s; market demand and supply and price changes, laws of returns and urban land values, built environment and municipal taxes.					
UNIT - III COMPONENTS OF PLANNING					8
Various aspects of planning - Land use planning, transportation planning, environmental planning, infrastructure planning. The fundamentals of the land use planning, Zoning principles and basis for formation of zoning laws. Growth management system, infrastructure (Infrastructure, Road, Water supply, Sanitation, Solid Waste Disposal) development and maintenance - Forecasting infrastructure needs of the town based on set of parameters such as population and size of the city, growth trend.Development Control Regulations and bye-laws, standards, CZR in India. Critical analysis of standards. ICT in city management.					
UNIT - IV URBAN PLANNING AND URBAN RENEWAL					6
Tools and techniques utilized at the local, regional, and state level –master plan, structure plan, and zonal plan. Local Governance and Administration: Objectives, Functions, Responsibilities and Organizational structure of: (i) Village Panchayats (ii) Municipalities (iii) Corporations and (iv) Urban Development Authorities.Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation and Conservation – Govt.schemes – case studies.					
UNIT - V CITIES -PARADIGM OF SOCIO POLITICAL EXPRESSION					5
Self sustained communities – SEZ – transit development – integrated townships – case studies.Cities as symbolic expressions of power – Chandigarh, Delhi, Bhubaneshwar, Brasilia, Regulations and standards in India. Critical analysis of standards.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	30	0	0	30	
TEXT					
1. Gallion Arthur B &Eisna Simon, The Urban Pattern: City Planning and Housing. 2. UDPFI guidelines 3. Town and Country Planning Act 1971with amendments 4. John Radcliffe, An Introduction to Town and Country Planning.					
REFERENCES					
1. C.L.Doxiadis, Ekistics, “An Introduction to the Science of Human Settlements”, Hutchinson, London, 1968. 2. Government of India, “Report of the National Commission on Urbanisation”, 1988. 3. AndroD.Thomas, “Housing and Urban Renewal”, George Allen and Unwin, Sydney, 1986. 4. Rodwin, Lloyd, ed., 1987. Shelter, Settlements and Development (Hemel Hempstead, United Kingdom, Unwin Hyman Ltd.) 5. Town and country planning Act 1971 with amendments					

SUB CODE	XAR 702	L	T	P	C
SUB NAME	ADVANCED BUILDING SERVICES	3	0	0	3
C:P:A	1.8:0:1.2				
		L	T	P	H
		3	0	0	3
UNIT – I INTRODUCTION					5
Introduction to Advanced Building Services. Basics of Building Management Systems (BMS), Integrated Building Management Systems (IBMS), Building Information Modeling (BIM) and Building Automation System (BAS). Scope and Importance of Building Management Systems.					
UNIT – II BUILDING INFORMATION MODELLING AND CONTROLLERS					10
Importance of Building Information Modeling (BIM), Tools used in BIM, facility operation using BIM. Controllers -Types and functions, Occupancy, Integration using Internet protocol.					
UNIT – III ASPECTS OF BUILDING MANAGEMENT SYSTEM					12
HVAC management – Central plant, Chillers, Cooling towers, VAV, AHU, Exhaust systems, Lighting management, Electrical systems management, Plumbing and Fire fighting systems management - detectors and alarm system integration with BMS. Energy management systems. Case study examples.					
UNIT – IV SAFETY AND SECURITY SYSTEMS					12
Access control systems, Closed circuit television, Intruder Alarm, Perimeter protection, Safety system integration with BMS.					
UNIT – V ADVANCEMENTS IN BUILDING MANAGEMENT SYSTEM					6
Advancements in the field of Building Management System. Intelligent buildings, Role of BMS in energy efficiency and maintenance cost. Case study examples.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1.Mechanical and Electrical Equipment for buildings, Benjamin Stein, John.S.Reynolds, Walter.T.Grondzik, Alison.G.Kwok, 10th edition, John Wiley and Sons, London, 2006.					
REFERENCES					
1. Smart Buildings Systems for Architects,Owners and Builders -By James M Sinopoli.					
2. Intelligent Buildings and Building Automation - By Shengwei Wang.					
3. Introduction to Building Management - By D. Coles, G. Bailey, R E Calvert.					
4. Building Energy Management Systems: Application to Low-Energy Hvac and Natural Ventilation Control- By G. J. Levermore.					
5. Smart grid home- By Quentin Wells.					

SUB CODE	XAR 703A	L	T	P	C
SUB NAME	PROJECT MANAGEMENT & TQM	3	0	0	3
C:P:A	2:0:3				
		L	T	P	H
		3	0	0	3
UNIT – I INTRODUCTION TO PROJECT MANAGEMENT					5
Project management concepts-objectives, planning, scheduling Controlling and role of decision in project management. Traditional management system, Gantt’s approach, Load chart. Progress Chart, Development of bar chat, Merits and Demerits.					
UNIT – IIPROJECT PROGRAMMING AND ANALYSIS					15
Project Network-Events Activity, Dummy, Network Rules, Graphical Guidelines for Network, Numbering the events, Cycles, Development of Network-planning for Network Construction, Models of Network construction, steps in development of Network. Work Break Down Structure, hierarchies. Concepts: critical path method-process, activity time estimate, Earliest Event time, Latest allowable Occurrence time, start and finish time of activity, float, critical activity and critical path problems. Cost model-Project cost, direct cost, indirect cost, slope curve, Total project cost, optimum duration contracting the network for cost optimization. Steps in cost optimization, updating, resource allocation-resource smoothing, resource leveling.					
UNIT – III PROGRAMMING EVALUATION REVIEW TECHNIQUE					10
PERT network, introduction to the theory of probability and statistics. Probabilistic time estimation for the activities for the activities of PERT Network.					
UNIT – IV COMPUTERIZED PROJECT MANAGEMENT					10
Introduction: Creating a New project, building task. Creating resources and assessing costs, Refining your project. Project Tracking-Understanding tracking, recording actual. Reporting on progress. Analyzing financial progress.					
UNIT – V TOTAL QUALITY MANAGEMENT					5
Introduction to TQM principles, TQM tools, SPC tools and quality systems - Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, TS16949, ISO 14000 – Concepts, Requirements and Benefits.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1. S.C.Rangwala, Elements of Estimating and Costing, Charoter Publishing House, India.					
REFERENCES					
1. Dutta, Estimating and Costing, S.Dutta and Co., Lucknow					
2.W.H.King and D.M.R.Esson, Specification and Quantities for Civil Engineers, The English University Press Ltd.					
3. T.N.Building Practice, Vol.1, Civil, Govt. Publication.					
4. P.W.D. Standard specifications, Govt. Publication					

SUB CODE	XAR704A	L	T	P	C
SUB NAME	INTERIOR DESIGN AND DETAILING	1	0	1	3
C:P:A = 4:1:0		L	T	P	H
		1	0	2	3
UNIT – I INTRODUCTION TO INTERIOR DESIGN					9
Definition of interior design - Interior design process - Vocabulary of design in terms of principles and elements - Introduction to the design of interior spaces as related to typologies and functions, themes and concepts - Study and design. Influence of historical styles, folk arts in interior design.					
UNIT – II ELEMENTS OF INTERIOR DESIGN - ENCLOSING ELEMENTS					9
Concept & theme Development: Enclosures & envelopes to formulate the volumes, response to functional spaces; Functionality: Spatial organization& Planning; different treatment methods for walls, floor, ceilings, services. Derivation of quantitative aspect of spaces based on User - Activity Analysis, furniture / equipment, Anthropometry, Ergonomics, Layout, Circulation, etc.; qualitative aspects based on ambience.					
UNIT – III ELEMENTS OF INTERIOR DESIGN– LIGHTING ACCESSORIES & INTERIOR LANDSCAPING					9
Technical decisions -Constructional details &Material specification - Exploration & selection responding to functionality & aesthetics; Decisions for aesthetics: Color, textures, patterns, surface finishes, ornamentation, furnishings, accessories, lighting, interior Landscaping, etc. with reference to visual comfort & ambience in the interiors.					
UNIT – IV ELEMENTS OF INTERIOR DESIGN – FURNITURE DESIGN & SPACE PLANNING					9
Study of the relationship between furniture and spaces - human movements & furniture design as related to human comfort - Function, materials and methods of construction - - Study on furniture for specific types of interiors like office furniture, children's furniture, residential furniture, display systems, etc. – Design Projects on Residential, Commercial and Office Interiors.					
UNIT – V INTERIOR DESIGN PROJECTS					9
Develop a working drawing for interior design detailing for office spaces, hotel lobbies etc. Residential/ commercial / Retails / Offices / Institutional / Hospitality / Recreational / Sports / Healthcare / Others. Site extent: Ranges from 200 m ² to 600 m ² .					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	15	0	30	45	
TEXT					
1. Francis .D.K. Ching, <i>Interior Design Illustrated</i> , V.N.R. Pub., NY 1987.					
2. Julius PENERO and Martin Zelnik, <i>Human Dimensions and Interior space Whitney Library of Design</i> , NY 1979.					
REFERENCES					
1. Steport - De Van Kness, Logan and Szebely, <i>Introduction to Interior Design</i> Macmillan Publishing Co., NY 1980.					
2. <i>Inca / Interior Design</i> Register, Inca Publications, Chennai, 1989.					
3. Kathryn .B. Hiesinger and George H.Marcus, <i>Landmarks of twentieth Century Design</i> ; Abbey Ville Press, 1993.					
4. SyanneSlesin and Stafford Ceiff - <i>Indian Style</i> , Clarkson N. Potter, Newyork, 1990.					
5. History of Interior design &furnitures ,Blakemore.R					
6. T.S.S. for Interior design & spaces, Chiara joseph					
7. Interior Design Illustrated, Ching D.K.					
8. Interior Design and Decoration, Premavathyseetharaman					

SUB CODE	XAR 705	L	T	P	C
SUB NAME	SEMINAR	0	0	1	2
C:P:A	1.8:0:1.2	L	T	P	H
		0	0	1	2
UNIT – I INTRODUCTION ABOUT STUDY OF ARCHITECTURAL SUBJECTS					5
A detailed methodology about how the process of evolution happens in the varied aspects of Architecture together with a research curiosity.					
UNIT II BASICS OF DOCUMENTING ARCHITECTURAL CONCEPTS					15
Architecture being a wide spectrum includes various methods of design evolution from product based to process based. Documenting the same through manual sketches, cognitive mapping techniques and compiling the information and presenting through both report form and visual presentation.					
UNIT III BASICS ABOUT PRESENTING BEFORE A COMMON FORUM					10
Create various situations encountering the communication ability of students. Basic exposure towards expressing the concepts of architecture and design through proper manner such as body language, boldness and clear content awareness in subject to be spoken.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	30	0	0	30	

SUB CODE	XAR 706	L	T	P	C
SUB NAME	ARCHITECTURAL DESIGN – VI	0	0	8	8
C:P:A	3.2:3.2:1.6	L	T	P	H
		0	0	16	16
DESIGN STUDIO					210
Design of large scale projects involving energy efficient and green building design.					
Examples: Five star hotel, airports, cultural centers, museum and exhibition complex, neighborhood design, housing projects, etc					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	0	0	210	210	
TEXT					
1. D. Gosling and Maitland - Urban Design - St. Martins Press 1984.					
2. Ian Bentley - Responsive Environment - A manual for Designer - Architecture Press, London - 1985.					
REFERENCES					
1. E and OE planning 11iffe Books Ltd, London 1973.					
2. P&D Act 1995.					
3. Edward D Mills planning 4 volumes Newnes - Butterworths, London 1976.					
4. Gordon Cullen - the concise Townscape - The Architectural press					

SUB CODE	XAR 801	L	T	P	C
SUB NAME	PRACTICAL TRAINING	0	0	0	4
C:P:A	3:1:0				
		L	T	P	H
		0	0	0	100
<p>The Practical Training would be done in offices / firms in India empanelled by the Institution in which the principal architect is registered with the Council of Architecture if the firm is in India or in an internationally reputed firm established abroad. The progress of practical training shall be assessed internally through submission of log books supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees. The students would be evaluated based on the following criteria:</p> <p>1. Adherence to time schedule, Discipline. 2. Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings</p> <p>3. Ability to work as part of a team in an office. 4. Ability to participate in client meetings and discussions 5. Involvement in supervision at project site. At the end of the Practical Training a portfolio of work done during the period of internship along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.</p>					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
		0	0	100 days	

SUB CODE	XAR 901	L	T	P	C
SUB NAME	PROFESSIONAL PRACTICE & ETHICS	3	0	0	3
C:P:A					
		L	T	P	H
		3	0	0	3
<p>UNIT – I ARCHITECT AND PROFESSION 9 Role of architect in society - role of IIA and COA– Salient features of Architects' Act 1972 - code of conduct, Partial/ Comprehensive Architectural service, Conditions of engagement of an architect - normal additional, special and partial services – scale of fees for various services - claiming of fees - relationship with client and contractor – management of an architect's office - elementary accountancy.</p>					
<p>UNIT – II ARCHITECTURAL COMPETITIONS 8 Types of competitions - appointment of assessors - duties of assessors - instructions to participants - rejection of entries - award of premium - guidelines prescribed by COA & IIA for promotion and conduct of competitions</p>					
<p>UNIT – III EASEMENTS AND ARBITRATION 8 Easements -Definition - types of easement – acquisition extinction and protection of easements - Arbitration in disputes - arbitration agreement - sole arbitration - umpire - accepted matters and – award</p>					
<p>UNIT – IV TENDER AND CONTRACT 8 Calling for tenders - tender documents - open and closed tenders - item rate, lump sum, labour and demolition tender - conditions of tender - submission of tender - scrutiny and recommendations. Conditions of contract - Form of contract articles of agreement - Contractor's bill certification</p>					

UNIT – V BUILDING RULES AND LEGISLATION**12**

The Building Rules and By laws - Panchayat , Municipal, Corporation. Role of Local Authorities and Local Planning Authorities Development Control Rules – Chennai Metropolitan Development Authority Environmental Acts and Laws, Fire Safety Rules – Role of EIA Committee Need for special rules on architectural control and development - Special Rules governing Hill Area Development - coastal area development - Heritage Act of India - **Role of urban Arts Commission, Tamil Nadu Factory Rules**

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	45	0	0	45

TEXT BOOKS:

1. Publications of COA IIA Hand book on Professional Practice, The Architects publishing Corporation of India, and Bombay 1987
2. Roshan Namavathi, Professional Practice, Lakshmi Book Depot, Mumbai 1984

REFERENCES:

1. J.J. Scott, Architect's Practice, Butterworth, London 1985
2. D.C. Rules for Chennai Metropolitan Area 1990
3. T.N.D.M. Building Rules, 1972
4. T.N.P. Building Rules 1942
5. Chennai City Corporation Building Rules 1972
6. Derek Sharp, The Business of Architectural Practice William Collins Sons & Co. Ltd., Erafton St., London W1 1986
7. The Tamil Nadu Hill Areas Special Building Rules - 1981
8. Environmental Laws of India - by Kishore Vanguri, C.P.R. Environmental Education Centre, Chennai.

SUB CODE	XAR 902	L	T	P	C
SUB NAME	HOUSING	3	0	0	3
C:P:A	3:0:0	L	T	P	H
		3	0	0	3

UNIT – I HOUSING ISSUES - INDIAN CONTEXT**8**

Need and Demand - National Housing and Habitat Policy - Housing Agencies and their role in housing development. Social factors influencing Housing Design, affordability, economic factors and Housing concepts – Slum Up-gradation and Sites and Services

UNIT – II HOUSING STANDARDS IN INDIA**8**

Standards and Regulations - DCR relevant to housing - Methodology of formulating standards - Performance standards. Traditional patterns - Row Housing and Cluster Housing - Layout concepts - Use of open spaces – Utilities and common facilities - **Case studies** - High Rise Housing

UNIT – III HOUSING DESIGN PROCESS**8**

Various stages and tasks in Project Development - Housing Management - Community participation - Environmental aspects - Technology. housing finances, financial institutions,

UNIT – IV REAL ESTATE DEVELOPMENT**14**

Property Development Process: The property development process from inception to completion ; parties involved; legislative and planning requirements including the Housing Developers (Control & Licensing) Act and Rules. Conception of Development Project: Conception of development; pro forma analysis; site identification investigation and options; preliminary drawings. Feasibility Study: Market analysis, including timing of development and real estate cycles. Cash flow analysis. Project Financing: Various financing arrangements

including partnerships and joint ventures; project accounts; construction finance. Project Construction: Contract negotiation; types of construction contracts; tendering procedures; project/development management. Real Estate Marketing: Marketing plan, evaluation and control of marketing process. Project Completion: **Handling over and management of completed project**

UNIT – V CURRENT TRENDS IN REAL ESTATE IN INDIA	7
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Role of various players in the Real Estate Sector – Land and Land transactions. taxes involved in land transactions.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	45	0	0	45

TEXT

1. Joseph de chiara & others - Time Saver Standards for Housing and Residential development, McGraw-Hill Co., New York, 1995.
2. .Karnataka state Housing Board - MANE - Publication - 1980.

REFERENCES

1. Richard Untermanu & Robert Small, Site Planning for Cluster Housing, Van Nostrand Reinhold Company, London/New York, 1977.
2. Forbes Davidson and Geoff Payne, Urban Projects Manual, Liverpool University Press, Liverpool, 1983.
3. Christopher Alexander, A Pattern Language, Oxford University Press, New York -1977.
4. HUDCO Publications - Housing for the Low income, Sector Model.

SUB CODE	XAR 903A	L	T	P	C
SUB NAME	ARCHITECTURAL CONSERVATION	3	0	0	3
C:P:A	3:0:0	L	T	P	H
		3	0	0	3

UNIT– I INTRODUCTION Definitions of – Heritage, Conservation, preservation, Environmental Conservation - Need for them - Indian Context - Role of architect in such programmes	6
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UNIT– II EVOLUTION AND METHODOLOGY Origin and evolution in history - architectural heritage - Methodology - Stages of development - Implementation tools and technologies.	10
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UNIT – III SOCIO –CULTURAL DIMENSION Social, Cultural, economical, and historical values of Conservation programme – Involvement of Community & Social Organisations – public participation – Conflict and compatibility between Conservation and development.	10
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UNIT – IV LEGISLATION AND INSTITUTIONS Special legislation – central and state — administrative aspects – New Concepts and emerging trends in Conservation. Role of UNDP, UNESCO, ICOMOS, ASI, INTACH and other agencies – their involvement.	11
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UNIT– V CASE– STUDIES Indian and International case Studies – Success and failure – reasons for it.	8
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TOTAL : 45

REFERENCES:

1. Conservation and Development in Historic Towns and Cities. - Pamela Ward - OridPress.Ltd.
2. Planning for Conservation - Kain Roger, - St.Martin N-Y1981
3. Recycling Cities – Cutler and Cutter – Canni, Massachussets,1976
4. Character of Towns an Approach to Conservation - Worskett Roy Architectural Press – London.
5. Guidelines for Conservation byINTACH

SUB CODE	XAR 904B	L	T	P	C
SUB NAME	LANDSCAPE ARCHITECTURE	3	0	0	3
C:P:A = 1.2:1.8:0					
		L	T	P	H
		3	0	0	3
OBJECTIVES: To familiarize students with the various elements, principle of landscape architecture and develop competency in dealing with the analytic, artistic and technical aspects of landscape design					
UNIT – I INTRODUCTION					6
Introduction to ecology, ecosystem, biosphere – components and working mechanism of ecosystem – types and courses of disturbance in ecosystem – man-made and natural e.g.Dereliction of land – reclamation, conservation and landscaping of derelict land.					
UNIT – II PLANTING DESIGN					9
Plants as design elements- classification – structural characteristic of plants – visual characteristics of plant viz. line, form, texture, colour, etc. – basic data for plant selection.					
UNIT – III ELEMENTS IN LANDSCAPE DESIGN					10
of Landscape design - Landscape character – Landscape Composition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments. Design Assignment: Plant selection and composition for given situation.					
UNIT – IV HISTORY OF GARDEN DESIGN					10
Study of principles and design – historic styles – Mugal gardens of India: Shalimar Bagh and TajMahal, Japanese gardens: Saihoji, Ryoanji&Katsura imperial palace, Italian Renaissance gardens: Villa Lante at Bagania.					
Landscaping for residential layout – recreational facilities, like parks, play fields- water front areas – hill areas – urban centers like squares, plazas , Consideration and key factors to landscaping of above context.					
Design Assignment : Landscape proposal and Drawing preparation for assigned project					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1. Landscape Architecture – John Omsbeesimonds .					
2. Planting Design – Theodore D Walker.					
REFERENCES					
1. Introduction to landscape design – John L.Motloch.					
2. Planting design Handbook – Nick Robinson.					
3. Site planning Standards – Joseph dechiara Lee E. Koppelman.					
4. Hand Book of Urban Landscape, The Architectural Press, London, 1973, Cliff Tandy.					

5. T S S for Landscape Architecture, McGraw Hill, Inc, 1995
6. Landscape planning and Environmental Impact Design , Turner
7. Landscape detailing , Little woods
8. Landscape design , Park C.

SUB CODE	XAR 905	L	T	P	C
SUB NAME	DISSERTATION	0	0	2	4
C:P:A	3.2:1.8:0	L	T	P	H
		0	0	2	4
OBJECTIVES: To motivate students to involve in individual research and methodology.					
TOPICS OF STUDY					60
The main areas of study and research can include advanced architectural design, including contemporary design processes, urban design, environmental design, conservation and heritage precincts, housing etc. However, the specific thrust should be architectural design of built environment. Preparation of presentation drawings and reports are part of the requirements for submission. The Dissertation shall be submitted in the form of drawings, project report, CDs and reports.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	0	0	60	60	

SUB CODE	XAR 907	L	T	P	C
SUB NAME	ARCHITECTURAL DESIGN– VI	0	0	16	8
C:P:A	3.2:1.8:0	L	T	P	H
		0	0	16	8
UNIT– I DESIGN STUDIO					240
Projects pertaining to Urban Design including Urban Renewal and Redevelopment -Involving intensive study of visual and other sensory relationship between people and their environment, problems concerning both preservation and development based on correlation of socio-economic and physical state and problems pertaining to traffic – Design and detailing for differently-abled at the city/street/buildingscale. Examples: Any part of a city exploring specific urban design typologies and alternatives for revitalization. Hill Architecture, High Tech Buildings, Green buildings, urban nodes/streets/district Large Transportation terminals, Conservation and Re-development, revitalization of historic core, etc.					
					TOTAL : 240
TEXT BOOKS					
1. D. Gosling and Maitland - Urban Design - St. Martins Press1984. 2. Ian Bentley - Responsive Environment - A manual for Designer - Architecture Press, London -1985.					
REFERENCES					
1. E and OE planning 11iffe Books Ltd, London1973. 2. P&D Act1995.					

3. Edward D Mills planning 4 volumes Newnes - Butterworths, London 1976.
4. Gordon Cullen - the concise Townscape - The Architectural press

XAR1001 THESIS

0 – 0 – 0 – 17

TOPICS OF STUDY

The main areas of study and research shall be Architecture, Urban design, Urban renewal, urban and rural Housing and settlements, Environmental Design, Conservation, Landscape Design, etc. However, the specific thrust shall be on architectural design and environment context with full understanding.

PRESENTATION REQUIREMENTS

The Thesis Project shall be submitted in the form of [drawings](#), [project report](#), [models](#), [Slides](#), [C.D's and reports](#), as required for the project.

TEXT BOOKS & REFERENCES

As per requirement of Topic and as suggested by the supervisor of Thesis.

TOTAL : 450

SUB CODE	XAR704B	L	T	P	C
SUB NAME	DISASTER RESISTANCE ARCHITECTURE	3	0	0	3
C:P:A =	2:0:0	L	T	P	H
		3	0	0	3
UNIT – I NATURAL HAZARDS AND MAN MADE HAZARDS					5
Introduction to Disaster Management – Contemporary, Natural and Man-made Disasters- Natural Hazards – Fundamentals of Disasters, Causal Factors of Disasters, Poverty, Population Growth, Rapid Urbanization, Transitions in Cultural Practices, Environmental Degradation, War and Civil Strife - brief description on cause and formation of flood, cyclone, earthquake, Tsunami and Landslides. Zoning and classification by center/ state government organizations. Geologic Hazards and Natural disasters – how to recognize and avoid them – hazards of faulting – hazards of geologic foundations. Man made hazards – fire, gas and chemical leakages, pollution and health hazards, manmade disasters – vulnerability analysis and risk assessment					
UNIT – II CONCEPTS FOR DISASTER RESISTANT DESIGN					5
Vernacular and historical experiences – case studies. Site selection and site development – building forms – Effects of cyclone, tsunami, hurricanes and seismic forces related to building configuration – spatial aspects – contemporary/ international approaches for low rise, mid-rise and high rise buildings. Innovations and selection of appropriate materials – IS code provisions for buildings – disaster resistant construction details.					
UNIT – III FUNDAMENTALS OF EARTHQUAKE AND BUILDING CONFIGURATION					5
Fundamentals of earthquakes - Earths structure, seismic waves, plate tectonics theory, origin of continents, seismic zones in India- Predictability, intensity and measurement of earthquake - Basic terms- fault line, focus, epicentre, focal depth etc. Site planning, performance of ground and buildings - Historical experience, site selection and development - Earthquake effects on ground, soil rupture, liquefaction, landslides- Behaviour of various types of					

building structures, equipments, lifelines, collapse patterns - Behaviour of non-structural elements like services, fixtures in earthquake - prone zones Seismic design codes and building configuration - Seismic design code provisions – Introduction to Indian codes- Building configuration- scale of building, size and horizontal and vertical plane, building proportions, symmetry of building- torsion, re-entrant corners, irregularities in buildings- like short stories, short columns etc

UNIT – IV EARTHQUAKE RESISTANT DESIGN	10
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Various types of construction details a) Seismic design and detailing of non-engineered construction- masonry structures, wood structures, earthen structures. b) Seismic design and detailing of RC and steel buildings c) **Design** of non-structural elements- Architectural elements, water supply, drainage, electrical and mechanical components

UNIT – V POST OPERATIVE MEASURES FOR DISASTER MANAGEMENT	5
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Methods to minimize damage to utilities – plaster / wall boards / furnishings/ swimming pools / antennas / free standing retaining masonry walls other remedies and post operative measures – cyclone and earthquake insurance – training for before and after natural hazards and ways to protect family, property and oneself from natural calamities. Role of international, national and state bodies – CBRI, NBO and NGOs in **disaster mitigation and community participation**

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	45	0	0	45

TEXT

1. Guidelines for earthquake resistant non-engineered construction, National Information centre of earthquake engineering (NICEE, IIT Kanpur, India), 2004.
2. C.V.R Murthy, Andrew Charlson. “Earthquake design concepts”, NICEE, IIT Kanpur, 2006.
3. . Agarwal.P, Earthquake Resistant Design, Prentice Hall of India, 2006.

REFERENCES

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

SUB CODE	XAR703B	L	T	P	C
SUB NAME	ADVANCED BUILDING TECHNOLOGY	3	0	0	3
C:P:A = 2:0:3					
		L	T	P	H
		3	0	0	3
UNIT – I MODERN MATERIALS					5
Dry wall construction, Special Use of waste products and industrial by-products in concrete making- smart materials– Geo-textiles and geo-synthetics – nano materials.					
UNIT – II MODERN CONSTRUCTION METHODS					10
Tall buildings structural systems – Rigid frames – Braced frames – Shear wall – Buildings – Wall frame buildings – Tubular buildings – Tube-in tube buildings – Outrigger braced system – Types – single, double & multilayered grids – two way& three way space grids, connectors, Grids – Domes - various forms. examples of tensile membrane structures – types of pneumatic structures. Biomimetics -Definition, Replicating natural manufacturing methods as in the production of chemical compounds by plants and animals; Mimicking mechanisms found in nature, Imitating organizational principles from social behavior of organisms; Examples: Spider-silk as a substitute for steel, Lotus effect in self-cleansing glass, Dinosaur spine in bridge design, Lily pad structure, termite mound cooling system, swarm theory, aerodynamic structures etc.					
UNIT – III PREFABRICATION AND CONSTRUCTION TECHNIQUES					15
Modular co-ordination, standardization and tolerances-system of prefabrication. Pre-cast concrete manufacturing techniques, Moulds –construction design, maintenance and repairPre-casting techniques - Planning, analysis and design considerations -. Joints -Curing techniques including accelerated curing such as steam curing, hot air blowing etc., -Test on precast elements - skeletal and large panel constructions - Industrial structures. Pre-cast and pre-fabricating technology for low cost and mass housingschemes. Small pre-cast products like door frames, shutters, Ferro-cement in housing - Water tank service core unit. Quality control - Repairs and economical aspects on prefabrication					
UNIT – IV DEMOLITION					5
Advanced techniques and sequence in demolition and dismantling of buildings.					
UNIT – V SAFETY ASPECTS INVOLVED IN CONSTRUCTION					10
Construction accidents - Construction Safety Management: - Environmental issues in construction - occupational and safety hazard assessment. Safety Programmes - Job-site assessment - Safety in hand tools- Safety in grinding- Hoisting apparatus and conveyors- Safety in the use of mobile cranes-Manual handling- Asbestos cement roofs-Safety in demolition work- Trusses, girders and beams- First- aid- Fire hazards and preventing methods- fire accidents - earthquake resistant design of buildings.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1. Peurifoy, R.L., Ledbette. W.B., Construction Planning, Equipment and Methods, McGraw Hill Co., 2000.					
2. Jimmy W. Hinze, Construction Safety, Prentice Hall Inc., 1997.					
REFERENCES					
1. Richard J. Coble, Jimmie Hinze and Theo C. Haupt, Construction Safety and Health Management, Prentice Hall Inc., 2001.					
2. Hand Book on Construction Safety Practices. SP 70, BIS 2001.					

3. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.
4. John Fernandez, Material Architecture, Architectural Press, UK.

SUBCODE	XAR 703C	L	T	P	C
SUB NAME	ARCHITECTURE AND STRUCTURE	3	0	0	3
C:P:A = 3:1:0					
		L	T	P	H
		3	0	0	3
UNIT – I HISTORY OF STRUCTURAL DESIGN IN THE PRE INDUSTRIAL ERA					6
Development of monolithic and rock cut structures- trabeated construction-arcuate construction vaults and flying buttresses- tents and masted structures and bridges through ancient and medieval history.					
UNIT – II HISTORY OF STRUCTURAL DESIGN IN THE POST INDUSTRIAL PERIOD					7
Post Industrial modular construction of large span and suspension structures in steel and concrete- projects of Pier Luigi Nervi, Maillart, Candella, Buckminster Fuller and Eero Saarinen.					
UNIT – III CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – I					10
The select case studies could include KCR Terminal at Hung Hom, Hong Kong, B3 Offices in Stockley Park , Sainsbury Centre for Visual Art, Renault Centre and Swindon UK by Norman Foster and Stansted Airport Terminal, London, UK by Foster/Arup British Pavilion EXPO 1992, Seville, Spain and Waterloo International Terminal by Nicholas Grimshaw					
UNIT – IV CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – II					15
The select case studies could include Inmos Microchip Factory, Centre Commercial St. Herblain, PA Technology, Princeton and Fleetguard, Quimper UK by Richard Rogers Athens Olympic Stadium and Village, Bridges and Public Bus Stop in St. Gallen , Railway Station, Lyon, France and Stadelhofen Railway station, Zurich Schweiz by Santiago Calatrava Kansai International Airport, UNESCO Workshop, the Jean-Marie Tjibaou Cultural Center, Menil Museum, Thomson Optronics Factory, IBM Traveling Exhibition Pavilion, Columbus International Exposition, Genoa Italy and Lowara Officers, Montecchio Maggiore Italia by Renzo Piano Building Workshop					
UNIT – V SEMINAR					7
Seminar to present a study of architectural form and structural expression through select cases which will aid understanding of structural philosophy and analysis, building envelope and services and construction sequence.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1. Shigeru Ban,McQuaid, Matilda, Engineering and Architecture: Building the Japan Pavilion, Phaidon Press Ltd, UK, 2008					
2. Cox Architects, The images publishing group, Australia, 2000 3. Masted structures in architecture, James B Harris, architect.; Kevin Pui-K Li, Oxford ; Boston : Architectural Press, 2003					
REFERENCES					
1. Martorell, Bohigas& Mackay, Pavilion of the Future, Expo 92, Seville (MBM),1992.					

2. P. COX, Daring Harbour Expo Center, Sydney Australia
3. Enric Miralles & Carme Pinos, Olympic Archery Building, 857072 COH
4. Prada Aoyama Tokyo Herzog & De Meuron. Milan, IT: Progetto Prada Arte Srl, 2003
5. Christopher Beorkrem, Material Strategies in Digital Fabrication, Routledge, Taylor & Francis Group, 2013

. SUBCODE	XAR 903D	L	T	P	C
SUB NAME	THEORY OF DESIGN	3	0	0	3
C:P:A = 2.4:0.6:0		L	T	P	H
		3	0	0	3
UNIT – I DESIGN					8
Definition of design, understanding of design, purpose of design, nature of good design and evaluation of design, types of design classifications, role of designer, design in history.					
UNIT – II DESIGN THINKING					12
Understanding the terms creativity, imagination, etc. Theories on thinking, convergent and divergent thinking, lateral and vertical thinking, creative techniques like checklists, brainstorming, syntactic, etc. design puzzles and traps, blocks in creative thinking.					
UNIT – III DESIGN PROCESS					8
Context for architectural design problems, design process, stages in the design process from different considerations, different ideas of design methodology.					
UNIT – IV DESIGN PROBLEMS AND SOLUTIONS					7
Different approaches to design, problem solving or intuitive, formulation of problems, nature of creative design problems, goals in design.					
UNIT – V DESIGN CONCEPTS, PHILOSOPHIES AND STRATEGIES					10
Various approaches to generate ideas for architectural design - types of concepts, personal philosophies and strategies of individual designers, channels to creativity in architecture.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	15	0	30	45	
TEXT					
1. Geoffrey Broadbent - Design in Architecture - Architecture and the human sciences - John Wiley & Sons, New York, 1981. 2. Nigel Cross - Developments in Design Methodology, John Wiley & Sons, 1984. 3. James C. Snyder, Anthony J. Catorex - Introduction to Architecture, McGraw-Hill Inc., 1979. Universal Design Principles					
REFERENCES					
1. Bryan Lauson - How Designers Think, Architectural Press Ltd., London, 1980. 2. Tom Heath - Method in Architecture, John Wiley & Sons, New York, 1984. 4. Allen Mave Evans & Caula David Dumes Nil, An Invitation to Design, Macmillan Publishing Co., New York, 1982. 5. Edward De Bono, Lateral Thinking 6. Christopher Alexander, Pattern Language, Oxford University Press.					

SUB CODE	XAR 904C	L	T	P	C
SUB NAME	BEHAVIORAL STUDIES IN BUILT ENVIRONMENT	3	0	0	3
C:P:A = 1.2:1.2:0.6		L	T	P	H
		3	0	0	3
UNIT – I CONCEPTS AND CONCERNS OF PERCEPTION					7
Definition - Visual perception - perceptual constancy, objective and spatial vision, attention and awareness, methods of vision perception and science.					
UNIT – II DEVELOPING SENSIVITY TO THE NEEDS OF USERS AND CLIENTS					8
Architectural assumptions and Environmental Designs, Designs and social practices, involvement of clients and user in Designs and built environment, realities of clients and public their impact projects and designs.					
UNIT – III DESIGNING AND PLANNING FOR URBAN QUALITY					10
Quality of urban environment and living - past, present and future trends, role of urban design in urban environment, planning for quality living in urban areas,					
UNIT – IV MICRO AND MACRO BUILT ENVIRONMENT AND BEHAVIORALASPECTS					5
Relationship of built environment to society, spatial relationship within built - environment, influence of physical environment on human behavior, influences of built environment on human behaviour.					
UNIT – V BUILT - ENVIRONMENT AND PERCEPTION					5
Case studies of tall buildings, low raise neighborhoods, interior and exterior elegance of built environment, local and regional level landscape.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1. Parfeet M and Power G, Planning for urban quality, Rent ledge, London 1977.					
2. JohathanBatnett - Urban Design as public polody - Haxper and row Publications New York, 1983					
REFERENCES					
1. Yantis .S (2001), Visual perception, Psychology Press, Philadelphia.					
2. Nicol D and Pilling S (2000), changing Architectural education - Towards new propersimalism, Spon Press, London.					
3. Frey H, (1999), Eand FN Spon, London.					
4. Dovey K, (1999) Framing Places. meditiating power in built form, Rent ledge, London.					

SUB CODE	XID501	L	T	P	C
SUB NAME	INTRODUCTION TO LANDSCAPE	3	0	0	3
C:P:A	1.3:.6:1.3	L	T	P	H
		3	0	0	3
UNIT – I INTERIOR LANDSCAPING					8
Introduction to landscape architecture. And role of landscaping design in the built environment, classification of plants, indoor plants and their functions, layout& components, Floriculture – commercial, ornamental, Selection of plants.					
UNIT – II PHYSICAL REQUIREMENTS OF PLANTS					8
Physical requirements of plants – light, temperature, water, planting medium, soil separator, weight of plants, acclimatization, maintenance, pests and diseases. Indoor plants in Indian context. Market survey and costs.					
UNIT – III INTERIOR LANDSCAPING ELEMENTS & PRINCIPLES					8
Various interior landscaping elements – Plants, rocks, water bodies - pools, fountains, cascades, artefacts, paving & lighting, Design guidelines- plant texture & colour, plant height, plant spacing. Automatic irrigation costing and installation of micro irrigation systems.					
UNIT – IV ROOF AND DECK LANDSCAPE					10
Protection of the integrity of the roof and structure, provisions for drainage, light weight planting medium, irrigation, selection of materials, water proofing, provision for utilities and maintenance.					
UNIT – V INTERIOR LANDSCAPE DESIGNS					11
Landscaping design parameters for various types of built forms- indoor and outdoor linkage to spaces. Landscaping of courtyards- residential and commercial forms. Indoor plants and their visual characteristics- Colour, texture, foliage. Science of maintaining and growing greenery. Flowers- its Colours, texture and its visual perception in various indoor spaces and science of flower arrangement.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
TEXT					
1. Time saver standards for landscape architecture. 2. Planting design by Theodore D.Walker, VNR Publications New York. 3. Landscaping Principles and Practices by Jack E.Ingels, Delmar Publishers.					
REFERENCES					
1. Designs for 20th century Interiors – Fiona Leolie, VH Publications, London. 2. Ross, R. (1999), Colorful gardening – climbers, Ryland peters and small, London. 3. Scott – James, A. (1995), perfect plant perfect garden, corner octopus limited, London 4. Too good, A. (1995), Designing with house plants, Grange Books publication, London. 5. Trivedi. P.Prathiba. Beautiful Shrubs. Indian council of Agricultural Research. New Delhi, 1990.					

SUB CODE	XID503	L	T	P	C
SUB NAME	COMPUTER AIDED DESIGN - III	1	0	2	3
C:P:A	0.75:1.5:0.75	L	T	P	H
		1	0	4	5
UNIT – IINTRODUCTION TO SKETCHUP & ITS TOOLS					12
Starting a drawing – Concepts –Principal tools for drawing, modification, construction, camera, walkthrough, sandbox etc – breaking edges, Google toolbar.					
UNIT II USE & MANAGEMENT OF SKETCHUP					15
Model setting and managers – colours and materials – entities – making input & output – technical information – common tasks - applications.					
UNIT III INTRODUCTION TO 3D HOME ARCHITECT					12
Starting a drawing – Drawing walls, windows, doors, staircases, columns, roof etc. modifying the properties of doors, windows etc. – applying materials, colour					
UNIT IV APPLICATIONS OF 3D HOME ARCHITECT					15
Adding furniture, fittings etc. - camera positions & viewing angles – rendering views with trees, cars, people etc. – Choosing a suitable walkthrough path & creation of the same					
UNIT V EXERCISES USING INTERIOR DESIGN STUDIO PROJECTS					21
Exercises in the use of Sketchup & 3D Home Architect for the designs done as a part of the Design studio classes will be done					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	15	0	60	75	
TEXT					
1.User manual & tutorials of Google Sketch Up software.					
2.User manual & tutorials of 3D Home Architect software					

SUB CODE	XID504	L	T	P	C
SUB NAME	INTERIOR MATERIALS AND CONSTRUCTION TECHNOLOGY - V	1	0	2	3
C:P:A	3:1:2	L	T	P	H
		1	0	2	5
UNIT – I FLOORING					10
Floor coverings - softwood, hardwood-resilient flooring linoleum, asphalttile, vinyl, rubber, cork tiles - terrazzo, marble & granite– properties, uses & laying. Floor tiles – ceramic glazed, mosaic and cement tiles - properties, use sand laying, and details for physically handicapped. Plates & Assignments: Layout, patterns, wet area and dry area. Typology in terms of Industrial, commercial, residential, etc.					
UNIT – II CEILING					10
Construction of various kinds of false ceiling based on materials such as thermacol, plaster of paris, gypboard, metal sheets, glass, particle boards, acoustic panels and wood. Construction of domes, vaults, & other special ceilings like Grid ceiling-flat-coves-integration of services-lighting, PA systems-HVAC grills-fixation of detectors and sprinklers. Plates & Assignments: Layout-patterns-fixing details-False Ceiling : all types, with full system, insulation, acoustical, etc.					
UNIT – III TERRACOTTA AND TILED ROOFS					10
Roofing tiles: terracotta, sheets and fibre boards – properties and application. Flooring tiles : Various natural as well as artificial flooring materials like, ceramic tiles, full					

body vitrified tiles, terracotta tiles, glass mosaic tiles, stone tiles, Mosaic, Rubber, Linoleum, PVC and PVA flooring, their Properties, other uses and applications in the interiors.

UNIT – IV THERMAL INSULATION	15
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Heat transfer – Heat gain and heat loss by materials – Types of insulation materials - vapour barriers and rigid insulation. Blanket, poured and reflective insulation - properties and uses of fibre glass, foamed glass, cork, vegetable fibres, mineral fibres, foamed plastics and vermiculite. Gypsum - manufacture, properties and uses, plaster of paris and anhydride gypsum. Foam based insulation. Internal wall insulation and EFIS – External façade insulation system. **Plates & Assignments:** Construction details of the material application of floors, walls and roofs – Cold storages- Detailing for physically handicapped.

UNIT – V ACOUSTIC INSULATION	15
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Porous, Baffle and perforated materials such as plastic, acoustic tiles, wood, particle board, fibre board, cork, quilts and mats - Brief study on properties and uses of the above - current developments.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	30	0	30	60

TEXT

1. P.C. Varghese, "Building Materials", Prentice Hall of India put Ltd New Delhi 110001, 2005.
2. B.C. Punmia, "Building Construction", 2005

REFERENCES

1. H. Morris, Geometrical Drawing for Art Students, Orient Longman Chennai.
2. Ralph W. Liebing "Architectural Working Drawing", John Wiley & Sons. Inc - 2000.
3. S.C.Rangwala, Engineering Materials, Charotar Publishing House, Anand, 1997.
4. Understanding Buildings: A Multidisciplinary Approach (Paperback) by Esmond Reid
5. R.J.S.Spencke and D.J.Cook, Building Materials in Developing Countries, John Wiley and Sons, 1983.

SUB CODE	XID505	L	T	P	C
SUB NAME	WORKING DRAWING AND SPECIFICATIONS-II	0	0	2	2
C:P:A	3:0:0	L	T	P	H
		0	0	2	4
UNIT – I DETAILING OF DRAWING ROOM					30
Working drawing of Full Plan with all Furniture Layout and all Items Named for Drawing room / Living room - Electrical Plan, False-ceiling Details, All furniture and storage details. Drawing room false ceiling drawing.					
UNIT – II DETAILING OF DINING ROOM					20
Working drawing of Dining room: Furniture layout Plan, Electrical Plan, Dining room false ceiling drawing.					
UNIT – III DETAILING OF BEDROOM					30
Working drawing of Bedroom: layout Plan, Electrical Plan, All furniture and storage details, Bedroom False ceiling drawing.					
UNIT – IV DETAILING OF MINI THEATER					10
Working drawing for a Mini theater: Furniture Layout and Screen plan, Electrical Plan, All furniture and storage details, Theater False ceiling drawings, Theater wall treatment and flooring details.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	0	0	90	90	

REFERENCES:

1. Frener, Weirick & Foster, Engineering Drawing & Graphic Technology, Tata McGraw Hills, New Delhi
2. Gill Robert, Rendering With Pen & Ink, Thames & Hudson
3. Muller A.J, Reading Architectural working drawings, Prentice Hall Inc.
4. Shah C S, Architects Handbook, Galgotia Publishing, New Delhi

SUB CODE	XID506	L	T	P	C
SUB NAME	INTERIOR DESIGN – IV (Ethnic / Vernacular)	0	0	6	6
C:P:A	3.6:2.4:0	L	T	P	H
		0	0	6	12

Parameters of design, anthropometrics. Understating the relationship between the human activity and space, furniture requirements, Interrelationship of architectural space to form, structure, and materials. Thematic space making with Art and craft forms of our own culture in India – East, West, North, Central and so on.

Applications of art / craft at public level spaces-lounge (hotel), restaurant of specific ethnic characteristics.

The design problem shall also take into consideration of activities and their relationship with space, function, Scale and proportion, culture and climate.

TEXT BOOKS:

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

REFERENCES:

1. Karlen Mark, Space planning Basics, Van Nostrand Reinhold, New York, 1992.
2. Joseph D Chiara, Julius Panero, & Martin Zelnick, Time Saver standards for Interior Design & space planning, 2nd edition, Mc-Graw Hill professional, 2001.
3. Francis.D. Ching & Corky Bingelli, Interior Design Illustrated, 2nd edition, Wiley publishers, 2004.
4. Julius Panero & Martin Zelnick, Human Dimension & Interior Space: A source book of Design Reference standards, Watson –Guptill, 1979.
5. Maureen Mitton, Interior Design Visual Presentation: A Guide to Graphics, Models, and Presentation Techniques. John Wiley and Sons, 2003
6. Mark.W. Lin, Drawing and Designing with Confidence: A step-by-step guide, Wiley and Sons, 1993.
7. Robert Rengel, Shaping Interior Space, Fairchild Books & Visuals ,2002
8. Neufert Ernest, Architect's Data, Granada pub. Ltd. London, 2000.
9. John F. Pile, A history of interior design, Laurence King Publishing, 2005.
10. Robin D. Jones, Interiors of Empire: Objects, Space and Identity within the Indian Subcontinent, Manchester University Press; illustrated edition, 2008

SUB CODE	XID601	L	T	P	C
SUB NAME	PROFESSIONAL PRACTICE	3	0	0	3
C:P:A	3:1:2	L	T	P	H
		3	0	0	3
UNIT – I INTRODUCTION TO INTERIOR DESIGN PROFESSION					9
Role of Interior Designer in society: Interior Design Profession as compared to other professions. Difference between profession and business. IIID and other organizations related to interior design profession. Interior Designers approach to works, ways of getting works					
UNIT – II ISSUES OF PROFESSIONAL PRACTICE					9
Issues of professional practice: Professional behaviour, Ethics, Types of clients, Contracts, Tenders, Arbitration etc. Career opportunities, styles of interior design practice, relationship between client and professional, type of fees, process of fees negotiations, billing methods, tax liabilities, contracts – types of contracts – item rate, labor, lump sum, cost plus percentage etc.					
UNIT – III DUTIES AND CODE OF CONDUCT					9
Interior Designer’s duties: Drawings to be prepared: Interior Designer’s relation with other parties connected with works such as client, contractor, sub-contractors, consultants and authorities. IIID Code of professional conduct: scale of charges: units and mode of measurements, clerk of work and his duties, inspection of work, certificate of payment to contractor, bill of quantities, schedule of rates, tenders, public, limited and negotiated tender documents and allied formalities.					
UNIT – IV OFFICE PRACTICES					9
Types of offices for interior design practice: staff structure, filing of records, correspondence and drawings, maintenance of accounts, presentations in meetings, recording minutes of meeting.					
UNIT – V ROLE OF INTERIOR CONSULTANTS					9
A report to be prepared by each student after visiting an interior designer’s office. Knowledge of role of consultants and coordination between different consultants on a big project.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
HOURS	45	0	0	45	
REFERENCES					
1. Indian Institute of Architects. H.B. Professional Practice’ The Architects pub. Bombay.					
2. Namavati. H. Roshan. Professional Practice. 8th ed, Lakshani Book Depot, Bombay, 2001.					
3. Christine.M. Piotrowski’ Professional practice for Interior Designers, 3rd edition, Wiley and sons, 2001.					
4. Cindy Coleman,Interior Design Handbook practice, Mc Graw Hill professional, isted, 2001					
5. Ronald Veitch, Professional practice for Interior Designers, Peguis Publishers, Limited, 1987.					

SUB CODE	XID602	L	T	P	C
SUB NAME	RETAIL INTERIORS	3	0	0	3
C:P:A	1:1.8:0.2	L	T	P	H
		3	0	0	3
UNIT – I RETAIL SPACES					10
Introduction, History of retail spaces, types of Retail spaces, Concepts of various spaces and their focus.					
UNIT II ADVERTISEMENT AND BRAND MANAGEMENT					10
Advertising to position and brand products and services creation of successful brands.					
UNIT III COMPETITIVE ANALYSIS					10
Analysis of competition, Product or service transformation to commodity quickly as competition & duplication of successful products.					
UNIT IV PHYSICAL ELEMENTS AND VISUAL MERCHANDISING					15
Elements -Mannequins, display hierarchy, design factors to visual merchandising, window displays and digital integration					
HOURS	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
REFERENCES					
1. George K.					

SUBCODE	XID604	L	T	P	C
SUB NAME	INTERIOR MATERIALS AND CONSTRUCTION TECHNOLOGY - VI	1	0	2	3
C:P:A	3:1:2	L	T	P	H
		1	0	2	5
UNIT – I CURTAIN WALLS					15
A detailed study about aluminium composite panel, double glazing and its various fittings and fixtures. Plates & Assignments: The basic joinery fixtures and panelling systems, hinge techniques, etc					
UNIT – II ELEVATORS					10
Elevators - Historical development of elevators or lifts. Elevators - size, capacity, speed, mechanical safety method, positioning of core under planning grid. Types of elevators - Electric, hydraulic - passenger, hospital, capsule, freight, etc. Dumb waiters, details of lift shaft and other mechanism. Plates & Assignments: Detailing and fitting for physically handicapped. Regenerative drives-speed conveyors.					
UNIT – III ESCALATORS AND CONVEYORS					10
Escalator types - Parallel and criss cross escalators, horizontal belt conveyors, horizontal moving walkways - concern for physically handicapped mechanical safety systems and automatic control. Speed conveyors – cables – sky lobby.					
UNIT – IV FURNISHING MATERIALS AND ADHESIVES					10
Fabrics and other furnishing materials – fibers – natural – silk, cotton, linen, damask, furs, etc: artificial - polyester, nylon, rayon, etc , textiles, fabric treatments, carpets, durries, tapestries, Drapery, upholstery, wall coverings, etc. – properties, uses and application in the interiors. Details of soft furnishings: types of Draperies, curtains, blinds, types of stitches, valences, linings, tiebacks, hanging details, etc. Adhesives – Natural and Synthetic, their					

varieties, thermoplastic and thermosetting adhesives, epoxy resin. Method of application, bond strength etc.

UNIT – V GREEN MATERIALS AND DESIGN	15
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Concept of Sustainability – Carrying capacity, sustainable development – Selection of materials Eco building materials and construction, U-values, embodied energy, Low impact construction, and recyclable products and embodied energy. Life cycle analysis. Energy sources – Renewable and non-renewable energy

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	30	0	30	60

TEXT

1. J.H. Callender, Time Saver Standard for Architectural Design Data, McGraw- Hill, 1994.
2. James Ambrose, Building Construction, Service Systems, Van No strand Reinhold, New York, 1992.
3. Arian Mostaedi , “Sustainable Architecture : Low tech houses”, Carles Broto, 2002.
4. Sandra F.Mendler & Willian Odell, “HOK Guidebook to Sustainable Design”, John willey and sons, 2000.

REFERENCES

1. H.A Thiruvananthapuram – Hand Book on Elevators – Printing and Publishing co – 1997.
2. United Technologies –OTIS – Tell me About Escalators – Printed in USA – 1990.
3. Pamphlets supplied and other literatures from N.B.O., SERC, CBRI, 1970 onwards.
4. R..Chudley, Construction Technology, Richard Clay (Chaucer Press) Ltd., Suffolk, 1978.
5. Slessor, Eco-Tech : “Sustainable Architecture and High Technology”, Thames and Hudson 1997

SUBCODE	XID605	L	T	P	C
SUB NAME	FURNITURE / PRODUCT DESIGN	3	0	0	3
C:P:A	3:0:0	L	T	P	H
		3	0	0	3
UNIT – I INTRODUCTION TO WOOD					8
Wood as a building material: Identification, selection, application, types of wood, commercial Classification, nomenclature, structure Anatomy and Ultra structure, Conversion figure and natural defects, availability of wood products, wood based panels such as plywood , MDF, HDF, Particle board , pre laminated boards etc					
UNIT – II THE BASICS OF FURNITURE CONSTRUCTION & TOOLS					7
Measurement and measurement systems, Furniture Construction: Drawers, Cadenza, dining chairs, sofa, settee, cots detail. Preparation for finishing, Furniture Materials Specifying timber finishes etc. Detailed construction drawings & explaining construction and material finishes					
UNIT – IIIPLYWOOD CONSTRUCTION TECHNIQUES					15
Plywood as a building material, Layout techniques and machining plans. Fabrication techniques - stapling, gluing. Furniture Joinery - screw joinery, nail joinery, Mortise & tenon joints, Dovetail joints, Dowel joints, Edge joints.					
UNIT - IV MODULAR KITCHENS					5
Modular kitchens, components basis of Construction involving, layouts, carcass, hardware selection, fixing details finishes and special types such as tall units, grain trolleys, and carousels fold outs etc. A detailed project involving the design of a small kitchen using modular components.					

UNIT – V FURNITURE MODEL MAKING				10
Preparation of block models of furniture using wood, boards, leather, fabric, thermacol, clay, soap/wax etc.				
	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	45	0	0	45
TEXT				
1. S. C. Rangwala - Engineering materials - Charotar Publishing, Anand 2. Francis D. K. Ching - Building Construction Illustrated, VNR, 1975, 3. Fevicol Furniture series				
REFERENCES				
1. W.B.Mckay –Building construction Vol1 –Longmans, UK 1981 2. W.B.Mckay –Building construction Vol 3 –Longmans, UK 1981				

SUB CODE	XID701	L	T	P	C
SUB NAME	PRACTICAL TRAINING	0	0	0	4
C:P:A	3:1:0	L	T	P	H
		0	0	0	100 days
<p>The Practical Training would be done in offices / firms in India empanelled by the Institution in which the principal architect is registered with the Council of Architecture if the firm is in India or in an internationally reputed firm established abroad.</p> <p>The progress of practical training shall be assessed internally through submission of log books supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees.</p> <p>The students would be evaluated based on the following criteria:</p> <ol style="list-style-type: none"> 1. Adherence to time schedule, Discipline. 2. Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings. 3. Ability to work as part of a team in an office. 4. Ability to participate in client meetings and discussions 5. Involvement in supervision at project site. <p>At the end of the Practical Training a portfolio of work done during the period of internship along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.</p>					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
		0	0	100 days	

M.ARCH SYLLABUS

YAR101 EMERGING PRACTICES IN URBAN HOUSING	3 0 0 3
UNIT I - INTRODUCTION	10
Introduction to this building type, from its industrial beginnings in London and Paris to New York City's Lower East Side and the 20th-century designs of Le Corbusier, Antonio Sant'Elia, and Mies van der Rohe to mention a few. Investigation of contemporary life and its influence on space and architecture-Globalization and influences on economy- Alternate housing solutions: Commune, Co Housing, Cooperatives, etc.	
UNIT II - SINGLE FAMILY, MULTI FAMILY HOUSING	10
Review of latest developments in single family and multi family housing by examining the works of WielArets, Shigeru Ban, Ben van Berkel, KeesChristiaanse, Philippe Gazeau, Frank O. Gehry, Steven Holl, Hans Kollhoff, Morger&Degelo, , Jean Nouvel, Kas Oosterhuis, MVRDV	
UNIT III - HIGH DENSITY HOUSING	6
Issues and concerns- Review of the current state of high density houses - the perspectives and future developments through a study of a few international projects.	
UNIT IV - NEW FORMS OF LIVING AND HOUSING IN THE DIGITAL ERA	10
Hyper Housing- Multi cultural Housing- lab rooms and cyber homes- Network housing- hybrid buildings- individual sheltered residences; residence cities and bio homes for senior citizens- Works of UN Studio; FOA; OMA	
UNIT V - DEFINITION OF HOUSING IN THE INDIAN CONTEXT	9
Design strategies in the context of Indian metropolitan cities will be explored through a studio exercise	
Total: 45 Hours	
REFERENCES	
1. Manuel Gausa and Jaime Salazer; Housing+ Single Family Housing; Birkhauser- Publishers for Architecture; 2005	
2. VinceneGuillart; Sociopolis:Project for a city of the Future; ACTAR; 2004	
3. Jingmin ZHOU; Urban housing Forms; Architectural Press; 2005	
4. Adrienne Schmitz; Multifamily Housing Development Handbook; Urban Land Institute; 2001	
5. CarlesBronto; Innovative Public Housing; Gingko Press; 2005	

YAR102 APPROPRIATE MATERIALS AND TECHNOLOGY	3 0 0 3
FOR SUSTAINABLE ARCHITECTURE	
UNIT I - INTRODUCTION 6 Architecture and the survival of the planet- Assessing patterns of consumption and their alternatives- Profit and politics- Natural building movement – new context for codes and regulations.	
UNIT II - DESIGN PRINCIPLES 12 Principle 1: Conserving energy; Principle 2: Working with Climate; Principle 3: minimizing new resources; Principle 4: respect for users; Principle 5: respect for site; Principle 6: holism- Illustrated with examples.	
UNIT III - SUSTAINABLE CONSTRUCTION 6 Design issues relating to sustainable developmentincluding site and ecology, community and culture, health, materials, energy, and water- Domestic and Community buildings using self help techniques of construction; adaptation, repair and management.-.portable architecture.	

UNIT IV - SYSTEMS MATERIALS AND APPLICATIONS**12**

Adobe- Cob- Rammed Earth- Modular contained earth- light clay- Straw bale- bamboo- earthen finishes, etc.- their sustainability; adaptability to climate; engineering considerations, and construction methods; Waste as a resource Portable architecture to Applications through specific case studies.

UNIT V- CASE STUDIES FROM THE CONTEMPORARY SCENARIO**9**

Ranging from small dwellings to large **commercial buildings, drawn from a range of countries to demonstrate best current practice.** **Total: 45 Hours**

REFERENCES

1. Brenda and Robert Vale; Green Architecture: Design for a sustainable future; Thames and Hudsson;1996
2. Lynne Elizabeth and Cassandra Adams; Alternative Construction: Contemporary Natural Building Methods
3. Victor Papanek; The Green Imperative; Thames and Hudson; 1995
4. Steven Harris and Deborah Berke; Architecture of the Everyday; Princeton Architectural Press; 1997
5. Pilar Echavarria; Portable Architecture- and unpredictable surroundings; Page One Publishing Pvt. Ltd.; 2005

SUB CODE	YAR103	L	T	P	C
SUB NAME	ADVANCED STUDIES IN REGIONAL AND VERNACULAR ARCHITECTURE	3	0	0	3
C:P:A	1.8:0:1.2	L	T	P	H
		3	0	0	3
UNIT – I INTRODUCTION					5
Brief introduction to vernacular architecture in global context – concepts and approaches in the study of vernacular architecture.					
UNIT – II VERNACULAR ARCHITECTURE IN INDIAN CONTEXT					8
The different vernacular architectural styles in India with examples. Northern region – Kashmir Architecture , Eastern region – Bengal Architecture, Western Region – Gujarat and kutch architecture, Rajasthan havelis, Southern Region – Kerala and Chettinadu Architecture.					
UNIT – III CONCEPTS AND PRINCIPLES IN VERNACULAR STYLE					12
Study and understand the concepts and principles of Indian vernacular styles in terms of climate response, materials and indigenous construction techniques followed.					
UNIT – IV CASE STUDY OF AN IDENTIFIED SETTLEMENT					15
Detailed study of a traditional settlement and analyzing in terms of the above discussed concepts and principles.					
UNIT – V SUITABILITY IN PRESENT CONTEXT					5
Discussion on the Suitability of the vernacular concepts in present context with examples.					
	LECTURE	TUTORIAL	PRACTICAL	TOTAL	
	45	0	0	45	
REFERENCES					
1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.					
2. Amos Rappoport, House, Form & Culture, Prentice Hall Inc. 1969.					
3. V.S.Praman, Haveli- Wooden Houses & Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.					
4. Kullrishan Jain &Minakshi Jain - Mud Architecture of the Indian Desert. Aadi Centre,					

Ahmedabad, 1992.

5. G.H.R. Tillotsum- The tradition of Indian Architecture Continuity, Controversy - Change since 1850, Oxford University Press, Delhi, 1989.
6. Carmen Kagal, VISTARA -The Architecture of India, Pub: The Festival of India, 1986.

YAR104 - SERVICES IN HIGH RISE BUILDINGS	3 0 0 3
UNIT I - INTRODUCTION	3
General introduction to Services in both horizontal spread and vertical rise layouts- Standards of high Rise buildings- Aspects and Integration of services- Relative costs- Concepts of Intelligence Architecture and Building Automation	
UNIT II - WATER SUPPLY AND WASTE DISPOSAL	9
Water supply and waste water collection systems- water storage and distribution systems- Planning and Design- Selection of pumps- rain water harvesting – Sewage collection systems and recycling of water- solid waste disposal.	
UNIT III - HVAC, Electrical and Mechanical Systems	15
Natural and Mechanical Ventilation systems- Air conditioning systems and load estimation- Planning and design for efficiency- Automation and Energy Management. Natural lighting systems- Energy efficiency in lighting systems- load and distribution- Planning and Design for energy efficiency- Automation. Types of elevators, systems and services- Lobby design- Escalators - safety principles	
UNIT IV - SAFETY AND SECURITY	6
Security systems- Access Control and Perimeter Protection- CCTV Intruder alarms- Passive fire safety- Fire Detection and Fire Alarm Systems- Planning and Design- NBC.	
UNIT V - CASE STUDIES	12
Case Studies of High Rise, High tech buildings and skyscrapers through appropriate examples- Norman Foster; Ove Arup; Ken Yeang, etc.	
Total: 45 Hours	
REFERENCES	
<ol style="list-style-type: none"> 1. A.F.C Sherratt, Airconditioning and Energy Conservation, The Architectural Press, London, 1980. 2. National Building Code. 3. Handbook for Building Engineers in Metric systems, NBC, New Delhi, 1968. 4. Philips Lighting in Architectural Design, McGraw-Hill, New York, 1964. 5. William H.Severns and Julian R.Fellows, Air-conditioning and Refrigeration, John Wiley and Sons, London, 1988. 	

YAR105 - ARCHITECTURAL DESIGN STUDIO –I (HOUSING)	0 0 16 8
Objective:	
To identify and address the issues of Housing in both urban and rural context through precedent studies; literature review; case studies, etc,. The objective also includes the study of the impact of globalization, real estate development, legal issues involved, policy and infrastructure development.	
The design problem shall include the horizontal spread or vertical rise housing projects including by critically analyzing the standards, services, legal issues involved, the principles and concepts in the present trend and the current technological development.	
Total: 240 Hours	

YAR 201- CONTEMPORARY: THEORIES AND TRENDS	3 0 0 3
UNIT I - OVERVIEW OF WORLD ARCHITECTURE SINCE 1970	6
Chronological Development leading to the High-tech architecture also known as Late Modernism or Structural Expressionism, Post Modernism and Deconstructivism	
UNIT II - CRITICAL REGIONALISM	8
The idea of critical regionalism - Works of Architects: Studio Granda, Eduardo Souto de Moura, Mazharul Islam, Alvaro Siza, Rafael Moneo, Glenn Murcutt, Ken Yeang, Juhani Pallasmaa, Wang Shu, JuhaLeiviskä, Peter Zumthor, Carlo Scarpa	
UNIT III POST-MODERN FUTURISTIC ARCHITECTURE	10
Postmodern architecture began as an international style - Continues to influence present-day architecture. Ideas and works of Architects: Cesar Pelli, Santiago Calatrava, Archigram, Louis Armet, Welton Becket, Arthur Erickson, Future Systems, John Lautner, Anthony J. Lumsden, Wayne McAllister, Oscar Niemeyer, William Pereira, Patricio Pouchulu, Eero Saarinen	
UNIT IV ANALYSIS OF ARCHITECT'S WORKS	15
Canonical architect's buildings that have exerted significant influences on the development of architecture will be studied in detail. Analysis of a building through drawings, text, bibliography and a physical model in a format ready for documentation and exhibition.	
UNIT V SEMINAR PRESENTATION	6
Student's presentation on the ideas and works of architects known for process oriented approach to architecture. Topics to be discussed with course faculty prior to presentation.	
Total: 45 Hours	
REFERENCES	
<ol style="list-style-type: none"> 1. Paul Allan Johnson. Theory of Architecture, Routledge 2000. 2. Kenneth Frampton. Modern Architecture since 1900. 3. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000. 4. Bryan Lauson- How Designers Think, Architectural Press Ltd., London 1980. 5. Tom Heath- Method in Architecture, John Wiley & Sons, New York, 1984. 6. Christopher Alexander, Pattern Language, Oxford University Press. 	

YAR 202 RESEARCH METHODOLOGY	3 0 0 3
UNIT I – INTRODUCTION	9
Basic research issues and concepts- orientation to research process- types of research: historical, qualitative, co-relational, experimental, simulation and modeling, logical argumentation, case study and mixed methods- illustration using research samples.	
UNIT II - RESEARCH PROCESS	9
Elements of Research process: finding a topic- writing an introduction- stating a purpose of study- identifying key research questions and hypotheses- reviewing literature- using theory- defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis- illustration using research samples.	

UNIT III - RESEARCHING AND DATA COLLECTION	9
Library and archives- Internet: New information and the role of internet; finding and evaluating sources- misuse- test for reliability- ethics Methods of data collection- From primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling- Problems encountered in collecting data from secondary sources.	
UNIT IV - REPORT WRITING	6
Research writing in general- Components: referencing- writing the bibliography- developing the outline- presentation; etc.	
UNIT V - CASE STUDIES	12
Case studies illustrating how good research can be used from project inception to completion- review of research publications	
Total: 45 Hours	
REFERENCES	
1. Linda Groat and David Wang; Architectural Research Methods;15 2. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2 nd Edition; Chicago guides to writing, editing and publishing; 3. Iain Borden and KaaterinaRuedi; The Dissertation: An Architecture Student's Handbook; Architectural Press; 2000 4. Ranjith Kumar; Research Methodology- A step by step guide for beginners; Sage Publications; 2005 5. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2002 6. Amos Rapoport; House, form and culture; 7. Christopher Alexander; Pattern Language 8. Diagram Diaries; Peter Eissenman;	

YAR 203A ADVANCED MATERIALS AND CONSTRUCTION TECHNOLOGY	3 0 0 3
UNIT I – MODERN MATERIALS	6
Dry wall construction, Special Use of waste products (fly ash, micro silica) and industrial by-products in concrete making- Self compacting concrete - reinforced polymers – Geo-textiles and geo-synthetics – nano materials.	
UNIT II – MODERN CONSTRUCTION METHODS	12
Tall buildings structural systems – Rigid frames – Braced frames – Shear wall – Buildings – Wall frame buildings – Tubular buildings – Tube-in tube buildings – Outrigger braced system – Types – single, double & multilayered grids – two way & three way space grids, connectors, Grids – Domes - various forms. Examples of tensile membrane structures – types of pneumatic structures. Biomimetics - Definition, Replicating natural manufacturing methods as in the production of chemical compounds by plants and animals; Mimicking mechanisms found in nature, Imitating organizational principles from social behavior of organisms; Examples: Spider-silk as a substitute for steel, Lotus effect in self-cleansing glass, Dinosaur spine in bridge design, Lily pad structure, termite mound cooling system, swarm theory, aerodynamic structures etc.	

UNIT III – PREFABRICATION AND CONSTRUCTION TECHNIQUES	12
Modular co-ordination, standardization and tolerances-system of prefabrication. Pre-cast concrete manufacturing techniques, Moulds –construction design, maintenance and repair. Pre-casting techniques - Planning, analysis and design considerations - Handling techniques - Transportation Storage and erection of structures. Joints -Curing techniques including accelerated curing such as steam curing, hot air blowing etc., -Test on precast elements - skeletal and large panel constructions - Industrial structures. Pre-cast and pre-fabricating technology for low cost and mass housing schemes.Small pre-cast products like door frames, shutters, Ferro-cement in housing - Water tank service core unit.Quality control - Repairs and economical aspects on prefabrication.	
UNIT IV – DEMOLITION	6
Advanced techniques and sequence in demolition and dismantling	
UNIT V – SAFETY PRACTICES IN CONSTRUCTION	9
Construction accidents - Construction Safety Management: - Environmental issues in construction - occupational and safety hazard assessment. Safety Programmes - Job-site assessment - Safety in hand tools- Safety in grinding- Hoisting apparatus and conveyors- Safety in the use of mobile cranes-Manual handling- Asbestos cement roofs-Safety in demolition work- Trusses, girders and beams- First- aid- Fire hazards and preventing methods-Interesting experiences at the construction site against the fire accidents - earthquake resistant design of buildings.	
Total: 45 Hours	
REFERENCES	
<ol style="list-style-type: none"> 1. Richard J. Coble, Jimmie Hinze and Theo C. Haupt, Construction Safety and Health Management, Prentice Hall Inc., 2001. 2. Hand Book on Construction Safety Practices, SP 70, BIS 2001. 3. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi. 4. John Fernandez, Material Architecture, Architectural Press, UK. 5. Rodney Howes, Infrastructure for the built environment, Butterworth Heineman 6. Peurifoy, R.L., Ledbette. W.B., Construction Planning, Equipment and Methods, McGraw Hill Co., 2000. 7. Jimmy W. Hinze, Construction Safety, Prentice Hall Inc., 1997 	

YAR 203B	ARCHITECTURE AND CRITICAL THEORY	3	0	0	3
UNIT I - INTRODUCTION		6			
Architectural Theory and practice- Relation between theory and practice.Traditions in/of architectural theory.CriticalTheory. Qualities and challenges of critical theory.					
UNIT II POWER AND BUILT ENVIRONMENT		10			
Forms of power.Power and knowledge.Panopticon.Colonialism as a form of dominance.Colonialism in India.Production of Indo-Saracen architecture.Ideas of segregation, control and surveillance in colonial towns.Discussing New Delhi as a part of imperial vision.Idea of Ghetto, surveillance and control in contemporary cities.					
UNIT III ENCOUNTERING MODERNISM/MODERNITY		10			
Phenomenology and architecture.Architecture and sense of place.Fragmentation and Nihilism as conditions of modern society. Counter claims. Encountering the idea of functionalism -					

Semiotic and Deconstruction as a critical tool. Architecture of Resistance. The idea of **critical regionalism**.

UNIT IV SPECTACLE AND ARCHITECTURE

10

Society of spectacle. Spectacle as a form of seduction. Debating aestheticisation of architectural issues. Critiquing learning from Las Vegas. World in a shopping wall. Thematic environments. Theme parks and privatization of public spaces. **Visual regime in architecture. Media and architecture.**

UNIT V ISSUES IN ARCHITECTURE

9

Gender and space. Heritage and politics of memory. City as contested geography. Technology and Architecture.

Total: 45 Hours

REFERENCES

1. Neil Leach (ed) Rethinking Architecture, Routledge 2000
2. Paul Allan Johnson. Theory of Architecture, Routledge 2000
3. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000
4. Anthony King, Urban Development in Colonialism
5. Nazzar Al Sayaad (ed) Forms of Dominance,
6. Lawrence Vale. Architecture and Nationalism and identity,
7. Anil Kumar, Colonialism, 2000
8. Thomas Metcalf Imperial vision, Oxford
9. Neil Leach, Aesthetics and Architecture,
10. Guy Debord. Society of Spectacle.

YAR 204 DIGITAL DESIGN PROCESS IN ARCHITECTURE

2 2 0 3

UNIT –I INTRODUCTION

10

Contemporary theories in Digital Architecture Evolution of Digital Architecture – Driving forces behind Digital Architecture – Digital Output and its process.

UNIT – II SOLIDS, SURFACES & VIRTUAL MEDIA

10

Works of Zvi Hecker – Shape Grammar – Hyper Surfaces – Interactive Architecture – Virtual Architecture .

UNIT- III Genetic Algorithms:

20

Fractal theory – Veronoi patterns – Cellular Automata-Linden Mayor systems – Basic Concepts and its application

UNIT-IV IDEAS AND WORKS OF CONTEMPORARY ARCHITECTS

10

Greg Lynn, Reiser + Umemotto , Lars Spuybroek/NOX Architects, UN Studio, Diller Scofidio, Dominique Perrault, Aranda Lasch, Herzog and De Meuron, Neil Denari, Michael Hasmeyer.

UNIT – V BIOMIMICS

10

Concept of Biomimics - Biomimicry and its application – Project based on Biomimics – Evolution of Biomimics in Architecture – Design **Assignment based on Biomimics** (either Digital or Manual) Lab Classes in Scripting and Rhino + Grasshopper.

Total: 60 Hours

REFERENCES:

1. Animate from – Greg Lyres
2. Chaos making of new science – James Gleick
3. The self made taps by: Patterns formed in Nature – Philip Ball.
4. Finding forms :Towards an Architecture of the Minimal – Frei Otto and Bodo Rasch.
5. Godel, Escher and Bach : An external Golden Braid – Douglas R. Hofstadter.
6. Emergence Staner Johnson
7. The Autopoiesis of Architecture – Patrick Schumacher.

YAR205 BUILDING MANAGEMENT SYSTEMS**2 2 0 3****UNIT -I INTRODUCTION****10**

Introduction to Basics of Building Management Systems (BMS), Integrated Building Management Systems (IBMS) and Building Automation System (BAS). Scope and Importance of Building Management Systems. Introduction to Facilities Management (FM) Building Information Modeling (BIM), Management Information systems (MIS). Introduction to Maintenance systems - Predictive Maintenance (PdM) , Corrective Maintenance.

UNIT-II ASPECTS OF BUILDING MANAGEMENT SYSTEM**10**

HVAC management –Central plant optimization (CPO) , Chillers, Cooling towers, VAV, AHU, Exhaust systems, Lighting management, Electrical systems management, Plumbing and Fire fighting systems management. Safety and Security systems management – Alarm systems, Access control systems, Closed circuit television, Intruder Alarm, Perimeter protection, Safety systems

UNIT – III CONTROL SYSTEMS, PROTOCOLS AND SERVICE INTEGRATION**16**

Controllers-Types and functions, Pneumatic control systems, electric control systems. Computerized control systems, Direct digital control, Sensors and Actuators-Types and functions. Occupancy, Integration using Internet protocol. Open protocols Vs Proprietary systems, BACnet Vs Lonmark, Fully Integrated system Vs Standalone operations. Integration of services – water pump monitoring & control - Control of Computerized HVAC Systems – Direct Digital Control - chillers, pumps, BTU monitoring & control – IBMS system and its components – centralized control equipments – sub- station and field controllers – field sensors.

UNIT - IV TRENDS IN BUILDING MANAGEMENT SYSTEM**12**

Energy Management and Control Systems (EMCS), Management Information systems (MIS) Building Energy Management systems (BEMS), BMS retrofitting, BMS towards sustainability and green practices. Intelligent buildings, Role of BMS in energy efficiency and maintenance cost. **Case study, examples.**

UNIT – V INTELLIGENT MANAGEMENT SYSTEMS AT URBAN LEVEL**12**

BMS Future cities, Intelligent/Smart cities, Smart grids, Demand driven distribution, District cooling and Heating, Wireless Building Technology, Intelligent wireless street lighting system, Intelligent Traffic Management systems, Intelligent guidance systems.

Total: 60 Hours**REFERENCES**

1. Smart Buildings Systems for Architects, Owners and Builders -By James M Sinopoli.
2. Intelligent Buildings and Building Automation - By Shengwei Wang.

3. Introduction to Building Management - By D. Coles, G. Bailey, R E Calvert.
4. Building Energy Management Systems: Application to Low-Energy Hvac and Natural Ventilation Control- By G. J. Levermore.
5. Smart grid home- By Quentin Wells

YAR 206 ARCHITECTURAL DESIGN STUDIO – II

0 0 16 8

Large scale projects such as campus [design](#), airport, civic centre, urban recreational centers, mixed use high rise development. Application of building management system, services details are to be incorporated in the detailed design drawings

Total :240 Hours

YAR 301 SUSTAINABLE LANDSCAPE DESIGN

3 0 0 3

UNIT I - ECOLOGY AND LANDSCAPE

6

Concept of Ecosystem: General Structure and Function - Energy flow, Primary & Secondary Production - Types of Biogeochemical cycles; Carbon cycle, Global water cycles, nitrogen cycle bioaccumulation and biomagnifications and - Analysis and evaluation. Concept of ecosystem services.- Types of Ecosystems Environmental Impact Assessment and the Environmental Impact Statement: Theory and Practice. Illustrative examples from India to demonstrate the degree of effectiveness. The role of Environmental Legislation and the Ministry of Environment and Forests.

UNIT II - PLANTS AND DESIGN

10

Basic plant structure/morphology/anatomy - Basic plant functions/growth & development / physiology - Principles of taxonomy / classification, identification and naming Familiarity with local flora. Ecological and Botanical considerations in landscape design. Plant data sheet. Planting as a design element for structuring the landscape. Structural and visual characteristics of plants. Principles of visual composition. Plant association. The role of plant material in environmental improvement, (e.g. soil conservation, modification of microclimate).

UNIT III - CULTURAL AND HISTORIC LANDSCAPE

10

Early traditions and beliefs about landscape and environment in east. Ancient Indian traditions – Vedic, Jainism, Buddhism and later Hindu movements. Symbolic meanings and sacred value of natural landscapes. Transfer of concepts through Buddhism to China – Chinese landscape development – gardens of China – Pre Buddhist Japanese landscapes – impact of China on Japanese gardens – Japanese gardens. Nomadic culture of central Asia – advent of Islam – concept of Paradise as a garden – spread of Islamic traditions to the West and East. Eastern expression of Islam – Samarkhand and Mughal India – Tomb and pleasure garden – Mughal concepts of site planning. Western expression of Islam – Spain Alhambra and Generalife, Granada.

UNIT IV- CONTEMPORARY LANDSCAPE

10

Industrialization and urbanization – impacts and development of the concept of public open spaces, open space development in new towns, parks movement. Study of selected works of modern landscape architects. Frederick Law Olmsted, *Martha Schwartz*, *Burle Marx*, *Ravindra Bhan* and other pioneers.

UNIT V- CASE STUDY

9

Issues in contemporary India, Analysis and understanding of philosophies of Contemporary

landscape works in India, **case studies**.

Total: 45 Hours

REFERENCES

1. Geoffrey and Susan Jellicoe, The landscape of Man, Thames & Hudson Publication, 1995
2. Robert Holden, New landscape Design, Lawrence king publishing, UK, 2003
3. Penelope Hill, Contemporary history of garden design, Birkhauser publishers, 2004
4. Elizabeth Barlow Rogers, Landscape Design – A Cultural & Architectural History, Hary & Abram inc. publishers, 2001.
5. Phillip Pregill & Nancy Volkman, Landscapes in History, Van Nostrand publishers, 1993.
6. Jonas Lehrman, Earthly Paradise- Garden and courtyard in Islam, Thames and Hudson, 1980.
7. G.B. Tobey, A history of American Landscape architecture, American Elsevier Publishing Co., NY, 1973.
8. Pieluigi Nicholin, Francesco Repishti, Dictionary of today's landscape design, Skira Editores P.A, 2003.

YAR 302 HERITAGE CONSERVATION PLANNING

3 0 0 3

UNIT – I INTRODUCTION TO ARCHITECTURAL CONSERVATION 6

Introduction to architectural conservation of heritage buildings, environmental conservation, purpose & scope of conservation projects in Indian context – Role of architect in such programmes, values & ethics of conservation programme- involvement of community & social organisations – public participation – conflict and compatibility between conservation and development.

UNIT – II PROCEDURE FOR CONSERVATION 10

Procedure for listing of structures for conservation. Inventories, inspection, documentation, degree of intervention for prevention of deterioration, prevention of existing state, consolidation of the fabric, restoration, rehabilitation, reproduction, reconstruction, etc. – to study the structural elements of buildings such as beams, arches, and domes, walls, piers & columns, foundation etc, causes of decay in buildings by natural and human factors, The role of conservation architect & his team.

UNIT – III STRUCTURAL CONSERVATION 10

Behavioral properties of traditional construction materials- various methods and techniques involved in structural conservation, case studies and examples.

UNIT – IV LEGISLATION AND INSTITUTIONS 11

Special legislation – Central and State. New concepts and emerging trends in conservation. Methods and procedures adopted by agencies such as UNDP, UNESCO, ICOMOS, ICCROM, ASI, INTACH

UNIT- V CASE STUDIES 8

Case studies of conservation projects in Indian and International context. Appraisal of conservation project in view of the above issues- success & failure – reasons for it.

Total: 45 Hours

REFERENCES

1. Conservation and development in historic towns & cities – Pamela Ward Press Ltd.
2. Planning for conservation – Kain Roger – St. Martin N-Y 1981.
3. Character of towns – An approach to conservation – Worskett Roy, Arch. Press – London.

4. Guidelines for conservation by INTACH.
5. Conservation of Historic Buildings, Sir Bernard M. Felidan, - Arch Press, 1982.
6. Gerald Glenn, "Presentation & Rehabilitation" (1996), ASTM International.
7. History of Architectural conservation, (1st Pub 1999, Reprint 2005) – Butterworth, Oxford, UK.

YAR 303 URBAN DESIGN PRACTICES	3 0 0 3
UNIT I INTRODUCTION TO URBAN DESIGN THEORY	10
City as a three – dimensional entity, study of volumes & open spaces, a brief Historic review of the development of the urban design discipline and principles. Historic developments of streets and squares	
UNIT II ELEMENTS OF URBAN DESIGN	10
Urban form as determined by the inter-play of masses, voids, building typology, scale, harmony, symmetry, colour, texture, light & shade, dominance, height, urban signage & graphics, organization of spaces & their articulation in the form of squares, streets, vistas & focal points, image of the city & its components.	
UNIT III URBAN DESIGN METHODOLOGIES	10
Methods of urban design surveys, documentation and representation. Cognitive mapping – contemporary and traditional, architectural expressions. Seminar presentation on transport planning in urban design.	
UNIT - IV URBAN RENEWAL & DEVELOPMENT	8
Historic overview of urban renewal, Development strategies for regeneration of inner city areas, recycling, renewal, etc. Case studies of urban renewal. Adaptive reuse and Brown Field projects in India and abroad. Infrastructure up gradation, economic regeneration, financing and management of urban renewal schemes. Institutional framework for urban conservation and renewal strategies in India.	
UNIT V CASE STUDIES	9
Legal & administrative aspects, policies, charters, case studies of proposals for urban design projects from India & Abroad	
Total: 45 Hours	
REFERENCES	
<ol style="list-style-type: none"> 1. Jon Lang, "Urban design" – a typology pf procedures & products 2005, Glsevier, North America.8 2. Gcoffrey Broadbent, "Emerging concepts in Urban Space Design-(1995), Jayker& ravel. 3. Cliff Monghtin, "UD-Street & Squace," (2003), Architectural Press. 4. Jonathan Barnett, "Designing cities without designing building", (1982), Harper & Row, New York. 5. Edmond Bacon, "Design of cities", (1976), revised edition, Viking Penguin Inc; U.S.A. 	

YAR 304B ENERGY SIMULATION AND MODELLING	2 -2 - 0- 3
UNIT I - INTRODUCTION TO ENERGY 10 Definition and units of energy, power, Forms of energy, Conservation of energy, second law of thermodynamics, Energy flow diagram to the earth. Origin of fossil fuels, time scale of fossil fuels, Renewable Energy Resources, Role of energy in economic development and social transformation.	
UNIT II - INTRODUCTION TO SOLAR ENERGY 10 Solar Spectrum, Solar Time and angles, day length, angle of incidence on tilted surface; Sunpath diagram; Shadow angle protractor; Solar Radiation: Extraterrestrial Radiation; Effect of earth atmosphere; Estimation of solar radiation on horizontal and tilted surfaces; Measurement of Solar radiation, Analysis of Indian solar radiation data and applications.	
UNIT III - INTRODUCTION TO ENERGY MODELING 10 Definition of energy modeling, Answers that energy modeling provide, Building modeling tools: Daylighting/ lighting modeling, Computational fluid dynamics(CFD), Building component analysis, HVAC analysis, Building thermal analysis, Whole building energy simulation programs.	
UNIT IV - INTERFACES AND SOFTWARE PACKAGES 15 Introduction to interfaces of energy modeling software packages, DOE2, ENERGY PLUS, ECOTECT, CLIMATE CONSULTANT, HEED, BERS, GREEN BUILDING STUDIO.	
UNIT - V CASE STUDY 15 Literature case study and live case study , Energy modeling of a residential building.	
	Total: 60 Hours
REFERENCES 1. Eddy Krygiel., Bradley Nies, Green BIM Wily publishing, Canada, 2008. 2. Advanced Energy Design Guide For Small Office Buildings, American Society of Heating Refrigerating and Airconditioning, USA 2004. 3. Davies, Morris Grenfell, Building Heat Transfer, Wiley, 2008. 4. Underwood, Chris, Modelling Methods For Energy In Buildings, WileyBlackwell, 2008. 5. International Energy Conservation Code 2003, International Code Council. 6. Baker, Nick, Energy And Environment In Architecture, Taylor & Francis, 2000. 7.Dobbelsteen, Andy van den, Smart Building In A Changing Climate, Island Press, 2009.	

YAR 305 DISSERTATION	0 0 6 3
Topics related to various aspects of Architecture would be chosen in consultation with faculty members, comprehensively researched, and findings presented in a series of seminars by individual students. The materials would be documented and formally presented as a Dissertation at the end of the semester	
	Total: 90 Hours

YAR 306 ARCHITECTURAL DESIGN STUDIO –III**0 0 16 8**

[Large scale architectural design projects](#) with the scope includes urban design and landscape issues. Projects such as neighborhood development, redevelopment, urban renewal projects, study documentation, analysis and proposal for inner city development, historic precinct development with the conservation and landscaping details

Total: 240 Hours**YAR 401 THESIS****0 0 0 14**

Thesis may be either THESIS BY DESIGN or [THESIS BY RESEARCH](#)

THESIS BY DESIGN

The design thesis is an independent topic explored and defined by the student in the previous semester. Students continue to take forward the thesis areas, leading to the development of a clear design proposal to be supervised by a faculty team and evaluated by an external jury. The tutorial will assist the students to strengthen the theoretical base of the thesis and analyze relevant successful design demonstrations through [case studies](#).

THESIS BY RESEARCH

The thesis by research is an independent research on a topic defined by a student, to be completed in the form of a comprehensive report under the supervision of an advisor and evaluated by an external jury. The tutorial will assist the student in research methodologies, conducting of surveys, identifying case studies etc. Types of research: descriptive vs Analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical research Introduction to urban research, Research design methodology, Descriptive research, Explanatory research, diagnostic, experimental research.

Total: 525 Hours