

School of Architecture & Planning
BBD UNIVERSITY
Bachelor of Architecture
SCHEME OF TEACHING & SCHEME OF EXAMINATION

Course Category	SUBJECT CODE	SUBJECT NAME	THEORY / PRACTICAL	SCHEME OF TEACHING					SCHEME OF EVALUATION										EXAM HRS
				Lecture (L)	Tutorial (T)	Studio / Practical (S/P)	Total (Hrs)	TOTAL CREDITS	CIA				ESE			Total			
									CT	TA	AT	TOTAL	Theory (T)	PRACTICAL /VIVA	TOTAL	A+B			
SEMESTER I																			
PC	AR1101	ARCHITECTURAL DESIGN - I	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	6		
BS & AE	AR1102	BUILDING CONSTRUCTION & MATERIALS-I	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1103	ARCHITECTURAL STRUCTURE - I	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1104	ARCHITECTURAL DRAWING - I	THEORY	2	2	1	5	5	24	8	8	40	60	0	60	100	3		
PC	AR1105	VISUAL ARTS-I	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1106	ENVIRONMENTAL STUDIES	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1101P	ARCHITECTURAL DESIGN - I (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—		
BS & AE	AR1102P	BUILDING CONSTRUCTION & MATERIALS-I (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—		
ECPE	AR1151	ELECTIVE - I	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—		
PC	AR1152	WORKSHOP	PRACTICAL	0	0	2	2	1	0	0	0	50	0	50	50	100	—		
PAEC/SEC	AR1153	COMMUNICATION SKILLS	PRACTICAL	1	1	0	2	2	0	0	0	50	0	50	50	100	—		
BS & AE	AR1154	HUMANITIES	PRACTICAL	1	0	0	1	1	0	0	0	50	0	50	50	100	—		
				TOTAL			30	27	TOTAL						1100				
SEMESTER II																			
PC	AR1201	ARCHITECTURAL DESIGN - II	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	6		
BS & AE	AR1202	BUILDING CONSTRUCTION & MATERIALS-II	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1203	ARCHITECTURAL STRUCTURE - II	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1204	ARCHITECTURAL DRAWING - II	THEORY	1	1	3	5	4	24	8	8	40	60	0	60	100	3		
PC	AR1205	VISUAL ARTS-II	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3		
PC	AR1206	HISTORY OF ARCHITECTURE & CULTURE -I (ANCIENT CIVILIZATIONS)	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1201P	ARCHITECTURAL DESIGN - II (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—		
BS & AE	AR1202P	BUILDING CONSTRUCTION & MATERIALS-II (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—		
ECPE	AR1251	ELECTIVE - II	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—		
PC	AR1252	ARCHITECTURAL RESEARCH - I	PRACTICAL	1	1	0	2	2	0	0	0	50	0	50	50	100	—		
BS & AE	AR1253	SURVEYING & LEVELLING	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	—		
PAEC/PNECC	AR1254	NTCC -I (EDUCATIONAL TOUR / DOCUMENTATION+WORKSHOP)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—		
				TOTAL			30	27	TOTAL						1100				
SEMESTER III																			
PC	AR1301	ARCHITECTURAL DESIGN - III	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	12		
BS & AE	AR1302	BUILDING CONSTRUCTION & MATERIALS-III	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1303	ARCHITECTURAL STRUCTURE - III	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1304	ARCHITECTURAL DRAWING - III	THEORY	1	1	3	5	4	24	8	8	40	60	0	60	100	3		
PC	AR1305	VISUAL ARTS-III	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3		
PC	AR1306	HISTORY OF ARCHITECTURE & CULTURE -II (HINDU ARCH.)	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1307	BUILDING SERVICES - I (WATER SUPPLY & SANITATION)	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1301P	ARCHITECTURAL DESIGN - III (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—		
BS & AE	AR1302P	BUILDING CONSTRUCTION & MATERIALS-III (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—		
ECPE	AR1351	ELECTIVE - III	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—		
PC	AR1352	ARCHITECTURAL RESEARCH - II	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	3		
PAEC/PNECC	AR1353	NTCC -II (SUMMER ASSIGNMENT)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—		
				TOTAL			30	27	TOTAL						1100				
SEMESTER IV																			
PC	AR1401	ARCHITECTURAL DESIGN - IV	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	12		
BS & AE	AR1402	BUILDING CONSTRUCTION & MATERIALS-IV	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1403	ARCHITECTURAL STRUCTURE - IV	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3		
BS & AE	AR1404	CLIMATOLOGY	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3		
PC	AR1405	HISTORY OF ARCHITECTURE & CULTURE-III (ISLAMIC ARCH.)	THEORY	1	2	0	3	3	24	8	8	40	60	0	60	100	3		
BS & AE	AR1406	BUILDING SERVICES - II (ELECTRICAL & LIGHTING)	THEORY	2	1	0	3	3	24	8	8	40	60	0	60	100	3		
PC	AR1401P	ARCHITECTURAL DESIGN - IV (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—		
BS & AE	AR1402P	BUILDING CONSTRUCTION & MATERIALS-IV (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—		
ECPE	AR1451	ELECTIVE - IV	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—		
PC	AR1452	ARCHITECTURAL RESEARCH - III	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	3		
PAEC/SEC	AR1453	COMPUTER STUDIO -I (AUTO CAD 2D & 3D)	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	—		
PAEC/PNECC	AR1454	NTCC-II(EDUCATIONAL TOUR / DOCUMENTATION+WORKSHOP)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—		
				TOTAL			30	27	TOTAL						1100				

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SEMESTER V																		
PC	AR1501	ARCHITECTURAL DESIGN - V	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	12	
BS & AE	AR1502	BUILDING CONSTRUCTION & MATERIALS-V	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3	
BS & AE	AR1503	ARCHITECTURAL STRUCTURE - V	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
EC/TE	AR1504	INTERIOR DESIGN	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3	
PC	AR1505	HISTORY OF ARCHITECTURE & CULTURE -IV (WESTERN ARCH.)	THEORY	1	2	0	3	3	24	8	8	40	60	0	60	100	3	
BS & AE	AR1506	BUILDING SERVICES - III (MECH. HVAC & F.F.)	THEORY	2	1	0	3	3	24	8	8	40	60	0	60	100	3	
PC	AR1501P	ARCHITECTURAL DESIGN - V (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—	
BS & AE	AR1502P	BUILDING CONSTRUCTION & MATERIALS-V (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—	
EC/PE	AR1551	ELECTIVE - V	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—	
PC	AR1552	ARCHITECTURAL RESEARCH - IV	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	3	
PAEC/SEC	AR1553	COMPUTER STUDIO -II (REVIT BASIC, SKETCH UP DETAILED)	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	—	
PAEC/PAEC	AR1554	NTCC -IV (SUMMER ASSIGNMENT)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—	
							TOTAL	30	27						TOTAL		1100	
SEMESTER VI																		
PC	AR1601	ARCHITECTURAL DESIGN - VI	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	12	
BS & AE	AR1602	BUILDING CONSTRUCTION & MATERIALS-VI	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3	
BS & AE	AR1603	ARCHITECTURAL STRUCTURE - VI	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
PC	AR1604	SPECIFICATIONS, COST ESTIMATION & BUDGETING	THEORY	1	2	0	3	3	24	8	8	40	60	0	60	100	3	
PC	AR1605	WORKING DRAWING	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3	
EC/TE	AR1606	THEORY OF DESIGN	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3	
BS & AE	AR1607	BUILDING SERVICES - IV (ACOUSTICS)	THEORY	2	1	0	3	3	24	8	8	40	60	0	60	100	3	
PC	AR1601P	ARCHITECTURAL DESIGN - VI (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—	
BS & AE	AR1602P	BUILDING CONSTRUCTION & MATERIALS-VI (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—	
EC/PE	AR1651	ELECTIVE - VI	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—	
PAEC/SEC	AR1652	COMPUTER STUDIO -II (3DS MAX, REVIT ADVANCED)	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	—	
PAEC/PAEC	AR1653	NTCC-VI(EDUCATIONAL TOUR / DOCUMENTATION+WORKSHOP)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—	
							TOTAL	30	27						TOTAL		1100	
SEMESTER VII																		
PAEC/PAEC	AR1751	ARCHITECTURAL TRAINING	PRACTICAL	0	25	0	25	25	0	0	0	400	0	0	600	1000	—	
PAEC/PAEC	AR1752	NTCC -VI (SUMMER ASSIGNMENT)	PRACTICAL	0	0	4	4	2	0	0	0	50	0	50	50	100	—	
							TOTAL	0	29	27					TOTAL		1100	
SEMESTER VIII																		
PC	AR1801	ARCHITECTURAL DESIGN - VIII	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	18	
BS & AE	AR1802	BUILDING CONSTRUCTION & MATERIALS-VIII	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3	
BS & AE	AR1803	ADVANCED STRUCTURAL TECHNOLOGIES & SYSTEMS	THEORY	0	0	4	4	2	24	8	8	40	60	0	60	100	3	
PC	AR1804	LANDSCAPE DESIGN	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
EC/TE	AR1805	ENERGY CONSCIOUS ARCHITECTURE	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
PC	AR1806	HUMAN SETTLEMENTS PLANNING	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
BS & AE	AR1807	BUILDING SERVICES - V (CS & BA)	THEORY	1	0	2	3	2	24	8	8	40	60	0	60	100	3	
OE	AR1808	OPEN ELECTIVE	THEORY	2	2	0	4	4	24	8	8	40	60	0	60	100	—	
PC	AR1801P	ARCHITECTURAL DESIGN - VIII (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—	
BS & AE	AR1802P	BUILDING CONSTRUCTION & MATERIALS-VIII (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—	
EC/PE	AR1851	ELECTIVE - VIII	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—	
PAEC/PAEC	AR1852	NTCC-VII(EDUCATIONAL TOUR / DOCUMENTATION+WORKSHOP)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—	
							TOTAL	30	27						TOTAL		1100	
SEMESTER IX																		
PC	AR1901	ARCHITECTURAL DESIGN -IX	THEORY	2	3	0	5	6	24	8	8	40	60	0	60	100	18	
BS & AE	AR1902	BUILDING CONSTRUCTION & MATERIALS-IX	THEORY	1	0	0	1	2	24	8	8	40	60	0	60	100	3	
BS & AE	AR1903	PROJECT MANAGEMENT (BE)	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
PC	AR1904	URBAN DESIGN	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
EC/TE	AR1905	DISASTER MITIGATION& MANAGEMENT	THEORY	0	0	4	4	2	24	8	8	40	60	0	60	100	3	
PAEC/PAEC	AR1906	PROFESSIONAL PRACTICE -I	THEORY	1	1	0	2	2	24	8	8	40	60	0	60	100	3	
OE	AR1907	OPEN ELECTIVE	THEORY	2	2	0	4	4	24	8	8	40	60	0	60	100	—	
PC	AR1901P	ARCHITECTURAL DESIGN -IX (VIVA VOCE)	PRACTICAL	0	0	2	2	1	0	0	0	0	0	50	50	50	—	
BS & AE	AR1902P	BUILDING CONSTRUCTION & MATERIALS-IX (VIVA VOCE)	PRACTICAL	0	0	3	3	1	0	0	0	0	0	50	50	50	—	
EC/PE	AR1951	ELECTIVE - IX	PRACTICAL	1	0	1	2	2	0	0	0	50	0	50	50	100	—	
PAEC/PAEC	AR1952	DISSERTATION	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	—	
PAEC/PAEC	AR1953	NTCC -VIII (SUMMER ASSIGNMENT)	PRACTICAL	0	0	0	0	1	0	0	0	50	0	50	50	100	—	
							TOTAL	30	27						TOTAL		1100	
SEMESTER X																		
BS & AE	AR1001	PROJECT BASED ADVANCED CONSTRUCTION TECHNIQUES	THEORY	0	0	4	4	2	24	8	8	40	60	0	60	100	3	
PAEC/PAEC	AR1002	PROJECT MANAGEMENT (PERT, CPM)	THEORY	2	1	0	3	3	24	8	8	40	60	0	60	100	3	
PAEC/PAEC	AR1003	PROFESSIONAL PRACTICE - 2	THEORY	2	1	0	3	3	24	8	8	40	60	0	60	100	3	
EC/PE	AR1051	ELECTIVE - X	PRACTICAL	1	0	2	3	2	0	0	0	50	0	50	50	100	—	
PC	AR1052	ARCHITECTURAL DESIGN THESIS	PRACTICAL	1	16	0	17	17	0	0	0	300	0	400	400	700	—	
							TOTAL	30	27						TOTAL		1100	

ELECTIVES				
Course Category	SUBJECT	ELECTIVES		
	AR1151	ELECTIVE - I	AR1151(1)	ARTS / PERFORMING ARTS PROJECT - I
			AR1151(2)	ARCHITECTURAL COMPETITIONS-I
			AR1151(3)	FOREIGN LANGUAGE -I
			AR1151(4)	ART APPRECIATION
			AR1151(5)	PHOTOGRAPHY
			AR1151(6)	ARCHITECTURAL PRINTING
	AR1251	ELECTIVE - II	AR1251(1)	ARTS / PERFORMING ARTS PROJECT - II
			AR1251(2)	ARCHITECTURAL COMPETITIONS -II
			AR1251(3)	FOREIGN LANGUAGE -II
			AR1251(4)	GRAPHIC DESIGN -I
			AR1251(5)	PUBLIC SPEAKING
			AR1251(6)	ARCHITECTURAL VOCABULARY
	AR1351	ELECTIVE - III	AR1351(1)	ARTS / PERFORMING ARTS PROJECT - III
			AR1351(2)	ARCHITECTURAL COMPETITIONS -III
			AR1351(3)	FOREIGN LANGUAGE -III
			AR1351(4)	SCALE & PROPORTIONS
			AR1351(5)	RURAL ARCHITECTURE
			AR1351(6)	TENSEGRITY STRUCTURES
	AR1451	ELECTIVE - IV	AR1451(1)	ARTS / PERFORMING ARTS PROJECT - IV
			AR1451(2)	ARCHITECTURAL COMPETITIONS-IV
			AR1451(3)	FOREIGN LANGUAGE -IV
			AR1451(4)	ERGONOMICS
			AR1451(5)	TRADITIONAL ARTS & CRAFTS - I
			AR1451(6)	DESIGN OF BUILDING ELEMENTS
	AR1551	ELECTIVE - V	AR1551(1)	ARTS / PERFORMING ARTS PROJECT -V
			AR1551(2)	ARCHITECTURAL COMPETITIONS -V
			AR1551(3)	FOREIGN LANGUAGE -V
			AR1551(4)	GRAPHIC DESIGN - II
			AR1551(5)	TRADITIONAL ARTS & CRAFTS - II
			AR1551(6)	BIO-MIMICRY ARCHITECTURE
	AR1651	ELECTIVE - VI	AR1651(1)	ARTS / PERFORMING ARTS PROJECT - VI
			AR1651(2)	ARCHITECTURAL COMPETITIONS-VI
			AR1651(3)	FOREIGN LANGUAGE -VI
			AR1651(4)	FURNITURE DESIGN
			AR1651(5)	PRODUCT DESIGN
			AR1651(6)	PATTERN LANGUAGE
	AR1851	ELECTIVE - VIII	AR1851(1)	ARTS / PERFORMING ARTS PROJECT - VII
			AR1851(2)	ARCHITECTURAL COMPETITIONS -VII
			AR1851(3)	FOREIGN LANGUAGE -VII
			AR1851(4)	ADVANCED COMPUTERS
			AR1851(5)	PSYCHOLOGY IN ARCHITECTURE
			AR1851(6)	REAL ESTATE
			AR1851(7)	VASTU SHAstra
			AR1851(8)	HIGH - RISE BUILDINGS
			AR1851(9)	RHAPSODY ARCHITECTURE
	AR1951	ELECTIVE - IX	AR1951(1)	
			AR1951(2)	ARCHITECTURAL COMPETITIONS -IX
			AR1951(3)	FOREIGN LANGUAGE -IX
			AR1951(4)	ADVANCED SPACIAL ANALYSIS
			AR1951(5)	ARCHITECTURAL CONSERVATION
			AR1951(6)	BIOPHILIC ARCHITECTURE
			AR1951(7)	VALUATION
			AR1951(8)	FUTURISTIC ARCHITECTURE
			AR1951(9)	HILL ARCHITECTURE
	AR1051	ELECTIVE - X	AR1051(1)	INTERIOR DESIGN
			AR1051(2)	LANDSCAPE DESIGN
			AR1051(3)	SERVICES
			AR1051(4)	WORKING DRAWING
			AR1051(5)	ESTIMATION & COSTING
			AR1051(6)	ADVANCED SOFTWARES
			AR1051(7)	PROJECT FEATURES

BABU BANARASI DAS UNIVERSITY, LUCKNOW



BBD UNIVERSITY

COURSE STRUCTURE

&

SYLLABUS

FOR

(Bachelor of Architecture-1ST YEAR)

On

Choice Based Credit System

(Effective from the Session: 2019-20)

School of Architecture & Planning

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SEMESTER I

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2020

COURSE CODE: AR 1101	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME: ARCHITECTURAL DESIGN-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-PC	2	3	0	5	6	40	60	--	100	6

SUBJECT OBJECTIVE

- To introduce to the students the fundamentals of basic design and development of design vocabulary.
- To nurture design thinking and to enable them to apply the same thought process in developing three-dimensional compositions.
- To introduce drawings and models as tools for conceptualization, organization and evolution of design thought process.

LEARNING OUTCOME

- Students will be able to explore basic design elements and their application in a visual composition and in architectural forms and spaces
- Analyze the emerging trends in professional architectural design.

MODULE 1

Orientation to the Architecture Profession

Role of an Architect in the built environment and changes in habitat in history. Building process, role of other professional in building. Architects act, C.O.A. I.I.A., NASA, etc.

MODULE 2

Basic Design

Introduction to elements of design like point, line, plane, solid and void, color, tone, texture. Understanding the importance of design principles like balance, harmony, rhythm, contrast, symmetry, scale, and proportions.

Basic design exercises: Analysis of objects and product design etc.

MODULE 3

Spaces and Form

Application of design principle in conceiving elementary architectural spaces through planes. Study of concept of space through 3D compositions. Introduction to external and internal forms, Analytical appraisals of forms, and their quality through form and transformation like addition and subtraction. 3D model exercises, exploring play of light and shade and application of color.

MODULE 4

Scale in Architecture

Simple measurement exercises about the idea of scale in architecture.

MODULE 5

Order in Architecture

Architecture Geometrical, Structural, Dimensional, Material, Spatial order - through observation of surroundings as well as simple exercises in 2-D and 3-D. Exercises in order and transformations of form and space.

NOTE: Compilation of all Architectural Design projects in the form of report/fact-file. Submission should be done in hardcopy as well as in softcopy (PowerPoint presentation/Photoshop presentation)

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture: Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport - Publications, Massachussets.

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3. Broadbent, G. (1973). Design in Architecture - Architecture and Human Science. New York: John Wiley and Sons.
4. Chauhan, P. (2005). Learning Basic Design. Mumbai: Rizvi College of Architecture.
5. Design Drawing. Hoboken: John Wiley & Sons.
6. Roger, K. L. (1998). Architect? A Candid Guide to the Profession. Cambridge: The MIT Press.
7. Rasmussen, S. (1962). Experiencing Architecture. 2nd Rev. Ed. Cambridge: MIT Press.

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- A large signature "Chauhan" with "Mohi" and a superscript "3" below it.
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COURSE CODE:AR1102	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-BUILDING CONSTRUCTION&MATERIALS-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-BS&AE	1	0	0	1	2	40	60	--	100	3

SUBJECT OBJECTIVES

- To familiarize the students with constituents, properties and uses of traditional building materials used in construction.
- To understand the usage of these traditional building materials in simple building works.
- To develop skills in understanding the complexities & constrains of brick masonry.
- To familiarize the student with the basic building construction practices on site.

LEARNING OUTCOME

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will have knowledge of construction details as applicable to Indian climatic conditions.
- Site visits and market surveys will help them explore various tools, equipments in the building construction.

BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY

MODULE-1

Clay & Clay Products: Mud including stabilized earth, Burnt Bricks, Brick Tiles, Brick Ballast and Surkhi. Classification, Availability, Characteristics, Manufacture and Uses of Cement, Lime, Mortar: Mud, Lime, Cement; Concrete Lime, Sand & Surkhi.

MODULE-2

Element of Building Terminology, Nomenclature of various parts of building from foundation to roof.

MODULE-3

Brick Work: Brick Terminology, Simple Bonds e.g. English bond & Flemish (single and double) bond in brick work for up to two brick thick walls. Brick Work Details at quoins and junctions in English bond and Flemish bond for up to two brick thick walls. Brick Work Details of piers (attached and detached), Buttresses, Lintel and Sill.

Stone Work: Elementary Stone Masonry, Types of joints. Random, Course and Ashlar Stone work.

MODULE-4

Foundation: Need, Design criteria, Foundation concrete, Details of simple spread foundations for load bearing walls of various thicknesses up to two brick thick.

LIST OF ASSIGNMENTS

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit brick kiln/ lime kiln/ cement factory etc. for better understanding and submit report.
3. To study the various tools, equipments used in masonry works.
4. To construct examples of brick & stone masonry works in construction yard.
5. To survey construction work on site and submit report.

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

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MODULE-5

Workshop/Construction Yard Practice Practicing in construction yard by making the examples of brick masonry works etc.

Site Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

CONSTRUCTION PLATES

1. To understand the terminology used in buildings, through face section.
2. To understand square stopped ends of said bonds in brick masonry.
3. To understand L, T and X Junctions of said bonds in brick masonry.
4. To understand of piers (attached and detached), Buttresses, Lintel and Sill.
5. To understand square stopped ends of Random, Course and Ashlar stone masonry.
6. To understand spread foundation for masonry load bearing walls.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
3. The Construction of Buildings – Barry Volume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction Mitchell (Elementary and Advanced) Renewal, S. C., "Building Construction", Charotar Publishing House, 2007
6. Building Construction-Bindra&Arora.
7. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
8. Building Materials by SC Rangwala: Charotar Pub. House, Anand
9. M. Gambhir, NehaJamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill
10. Publishers, New Delhi, 2011.
11. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
12. National Building Code of India (Latest Edition), Bureau of Indian Standards.
13. Engineering Materials-Deshpande.
14. Engineering Material-Roy Chowdary
15. Designing with models – Criss. B. Mills.
16. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
17. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
18. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.

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COURSE CODE:AR1103	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL STRUCTURE -I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-BS&AE	1	1	0	2	2	40	60	0	100	3

SUBJECT OBJECTIVE

- Introduction of terminology of Structures to architectural students.
- To understand the basic principles of structural mechanics so that it forms the basis for study of structural design.

LEARNING OUTCOME

- To equip the students with necessary mathematical background to comprehend the aspects of design elements and structural stability.
- To recap students about the mathematical concepts of statistics and probability, matrices, differential and integral calculus and partial differentiation and enable them to understand the application of these mathematical concepts related to architecture.

MODULE-1

Simple Stresses and Strains

Elasticity, Stress, Strain, Types of stresses, Elastic limit, Hook's Law, Modulus of Elasticity, Stresses in Composite Bars. Primary or Linear Strain, Poisson's ratio, Shear stress, Principal stresses and strains.

MODULE-2

Centre of gravity - definition, Methods of finding out centre of gravity of simple figures, Centre of parallel forces.

MODULE-3

Moment of Inertia Definition, Important theorems, Calculation of moment of inertia by first principles and its application, Moment of inertia of composite sections.

MODULE-4

Elements of Statics Simple beams in bending, Section modulus, Direct and bending stress. Shear stress in section of beam, Shears centre.

MODULE-5

Shear Force and Bending Moments in Beams, Moment of resistance. Shear force and bending moment diagrams.

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku, "Elementary Structural Analysis".
5. R.K.RAJPUT., "Strength of Materials".

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COURSE CODE:AR1105	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-VISUAL ARTS-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-PC	1	0	2	3	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To familiarize students with application of art in architecture.
- To introduce fundamental techniques of Visual representation and to equip them with the basic principles of representation.
- To enhance skills in developing a graphical language of architecture.

LEARNING OUTCOME

Upon successful completion of this course students will be able to:

- Understand art with respect to Architecture.
- Student will develop art and graphic skill.

MODULE -1

Free hand sketching

Daily life objects- trees shrubs and plants, vehicle (2 wheeler) etc.

MODULE -2

Rendering skills: Monochrome medium, textures, finishes using various equipment like rotoring pens, airbrush, watercolors, dry pastels etc.

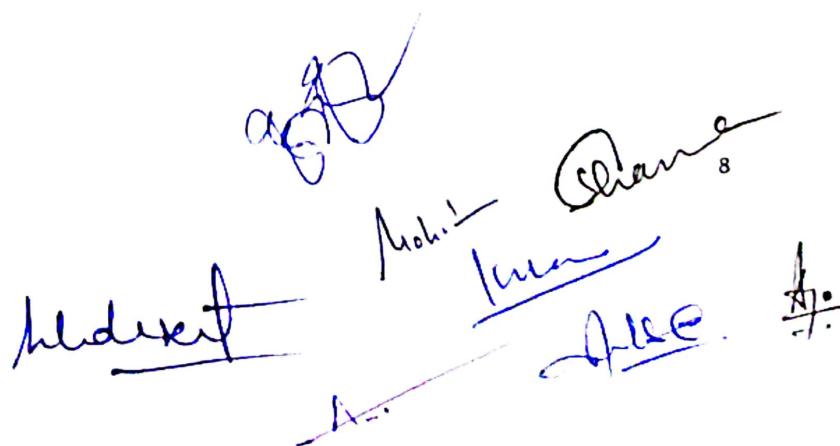
Painting techniques through different medium like watercolor etc.

MODULE -3

Sculpture: clay, terracotta, paper machete and sculpture from waste material.

REFERENCE BOOKS

1. Arnold Dana, "Art History – A Very Short Introduction", Oxford University Press.
2. Stallabrass, Julian, "Contemporary Art – A Very Short Introduction", Oxford University Press
- 3 Martin, L. C. (1970). Architectural Graphics. 2nd Ed. Macmillan Pub Co.
4. Landscape Graphics: Plan, Section, and Perspective Drawing of Landscape Spaces by Grant Reid
5. Rendering with pen and ink by Arthur L. Guptill



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COURSE CODE:AR1106	SCHEME OF TEACHING						SCHEME OF EVALUATION				
COURSE NAME: ENVIRONMENTAL STUDIES	L/S	T	P/V	HOURS	CREDIT		CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY: BS&AE	1	1	0	2	2		40	60	0	100	3

SUBJECT OBJECTIVE

The main objectives of the course are:

- To create awareness and improve knowledge about environment
- To conserve natural resources through sustainable use
- To prevent, control of pollution and protect environment
- To develop skill and participation in environment protection activities

LEARNING OUTCOME

After the completion of the course, students shall have a better:

- Understanding , awareness and knowledge of environment and related issues
- Developed skill to resolve many interrelated problems of socio- economic nature and ecology
- Understanding to conserve natural resources and sustainable use.
- Understanding of environmental protection.

MODULE 1

Environment and Natural Resources

Environment: Components of environment, ecosystem, energy flow, material cycle (Nitrogen and Carbon), food chain, and food web, ecological pyramids, population dynamics and prey – predator interaction. Environmental impact assessment (EIA): Definition, concept, Elements of EIA, prediction of impacts, methodology, sustainable development. Natural resources: Renewable and non-renewable natural resources, drinking water quality, water borne and water induced diseases, Arsenic and fluoride problem in drinking water, deforestation, impact of over exploitation of mineral resources. Energy Resources: conventional and non conventional energy resources, solar energy, hydro power energy, hydrogen energy, geo- thermal energy , bio-mass energy, nuclear energy, Fossil fuels.

MODULE 2

Environment Pollution and Current Environmental Issues

Environmental pollution: Definition, pollutants, sources, causes, effects and control measures of air, water, noise, soil pollutions. Solid waste management: Solid waste source, characterization, effects and control measures of urban and industrial waste. Waste water treatment. Current environmental issues: population growth, logistic curve equation, climate change, global warming, acid rain, ozone layer depletion, threats of bio-diversity and its conservation, nuclear hazards. Rain water harvesting, natural disaster and its management. Environment protection: Legal aspects of environment protection, environment protection act, air (prevention and control of pollution) act, water (prevention and control).

REFERENCE BOOKS

1. Agarwal, K.C.2001 Environmental Biology, NidiPubl.Ltd. Bikaner.
2. BharuchaErach, The biodiversity of India, Mapin Publishing pvt. Ltd., Ahmedabad-380013, India.
3. Brunner R.C., Marine Pollution, ClandersonPross Oxford (TB)
4. Cunningham, W.P.Cooper, T.H. Gorhani, E & Hepworth, M.T.2001, Environmental Encyclopedia, JaicoPubl, House, Mumbai, 1196p.
5. De A.K., Environmental Chemistry, Wiley Eastern Ltd. Down to Earth, Centre for Science and Environment ®

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COURSE CODE:AR1151(1)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARTS/ PERFORMING ARTS PROJECT-I

SUBJECT OBJECTIVE

- To embed stronger and more enduring means of evoking architecture and culture.

LEARNING OUTCOME

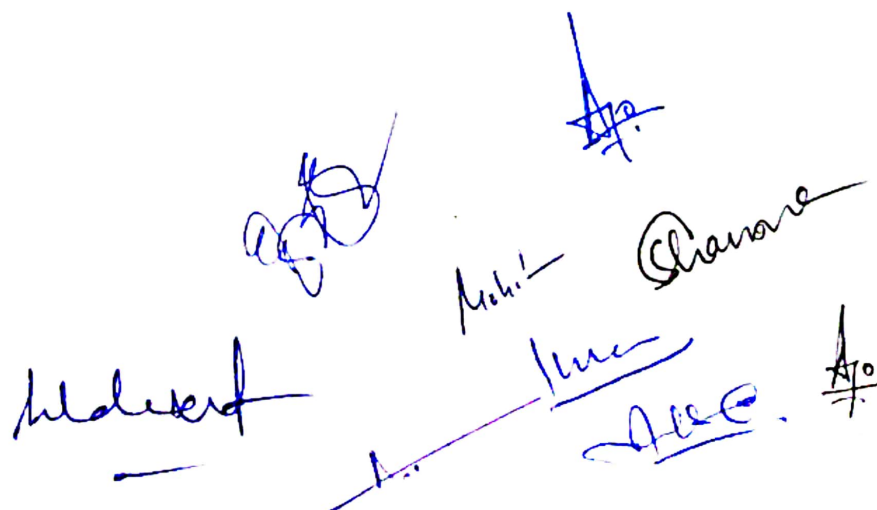
- Students will perform different cultural activities in coordination with the stream of Architecture being taught in their respective semesters.

MODULE

Exercises on topic of Architectural interest like debate, skits, extempore, presentation, theatrical exercises, set design, screenplay writing, movie making, scrip writing - individually or in groups to develop their communication skills, using theater as a medium.

It will also train the students towards team building.

NOTE: The course will commence in collaboration with artists of different concerned fields.



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COURSE CODE: AR1151(2)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL COMPETITIONS-I

SUBJECT OBJECTIVE

- To provide a wide range of design solution for creating interest in role of architecture in national and international design competitions.

LEARNING OUTCOME

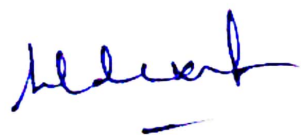
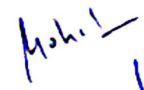
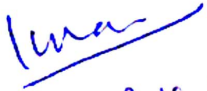
- Understanding of Contemporary Architecture.
- Development of idea of Team Work.
- The student will learn to formulate architectural concept and learn to work in time frame scenario.

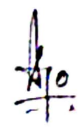
MODULE-1

Students will participate in different national and international competitions introduced by Architects, Architectural colleges, firms, forums and NGO's. Council of Architecture, NASA, Zonal NASA, etc.

The students will formulate the scheme under the guidance of faculty mentors and prepare basic design layout and competition requirements.

The students will have hands on practice of the rendering techniques.



COURSE CODE: AR1151(4)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ART APPRECIATION

SUBJECT OBJECTIVE

- To explore visual art forms and their cultural connections for the student with little experience in the visual arts.
- It includes a brief study of art history and in depth studies of the elements, media, and methods used in creative processes and thought.

LEARNING OUTCOME

- Students will be able to develop the concepts of art forms and in conjunction also developed the visual art forms of different ages of civilizations.

MODULE

- To introduce the vocabulary of art constituted by its elements (line, shape, form, space, color, light, value, texture) and principles (unity, variety, harmony, rhythm, balance, proportion, emphasis, contrast, movement)
- A concise study of evolution of art production from prehistoric beginnings to classical to modern art. New directions in art thru' various-isms such as impressionism, fauvism, expressionism, cubism, Dadaism, surrealism, futurism, constructivism, de stijl, abstract expressionism, pop art and new emerging forms of artistic expression.
- A concise study of art production in India. Important works from art traditions from Indus Valley Art- Hindu, Buddhist and Jain art – Mughal and Rajput miniatures – art during the colonial period - modern Indian Art.
- Learning 'appreciation' through the technique of 'critique'. An initiation to verbal and written expression of experiencing various art forms (culinary art, cinema, theatre, performing arts such as vocal and instrumental renditions, various dance forms etc).
- Appreciating a work of architecture by analysis of work of an architect. Or a local built environment for synthesis of art in architecture.

REFERENCE BOOKS

- Ching, Francis D. K. "Architecture: Form, Space and Order", John Wiley and Sons Inc.
- Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachusetts.
- Broadbent, G. (1973). Design in Architecture - Architecture and Human Science. New York: John Wiley and Sons.
- Chauhan, P. (2005). Learning Basic Design. Mumbai: Rizvi College of Architecture.
- Design Drawing. Hoboken: John Wiley & Sons.
- Roger, K. L. (1998). Architect? A Candid Guide to the Profession. Cambridge: The MIT Press.
- Rasmussen, S. (1962). Experiencing Architecture. 2nd Rev. Ed. Cambridge:



COURSE CODE: AR1151(5)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME - ELECTIVE-I	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

PHOTOGRAPHY

SUBJECT OBJECTIVE

- To develop basic photography skills
- To acquaint students to various equipments and technology used in photography
- To educate students with techniques for better frame selection
- To encourage to participate in nation and international architectural competition.

LEARNING OUTCOME

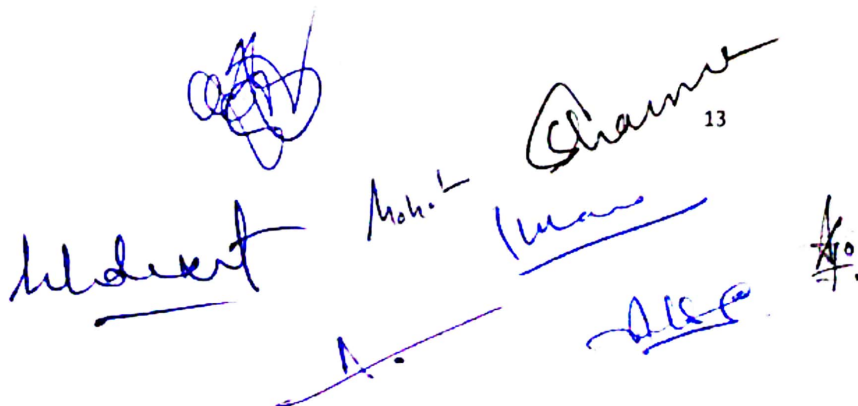
- Students will be exposed to a variety of analog and digital photographic techniques.
- Students will understand the relationship between digital and film based photographic practice and is able to move freely throughout the medium.
- Students will be introduced to contemporary and historic photographers and their images.

MODULE

- Addressing photographic theory, technical issues, applications composition, practice and history. History of photography- Pinhole Camera, Camera Obscura, Normal Human Eye and Process of Seeing-Human eye and camera
- Introduction to advanced film photography, digital photography, video and film making. Learning how to elevate photography by appreciation of art by providing a better understanding on how to use mediums of photography.
- Camera principles- Compact cameras and SLR's - Working of SLR camera - understanding different parts of SLR camera
- Creative mode and basic modes in SLR camera
- Basic features of SLR camera: Focusing- Aperture-shutter speed-slow and fast shutter speeds, applications of slow and fast shutter speeds, ISO, when to use ISO function.
- Angle of view- Different types of lenses-normal lens, wide angle lens, fish eye lens, prime lens, telephoto lens.
- Depth of Field-Shallow depth of field, large depth of field, Depth of focus
- Different camera accessories

REFERENCE BOOKS

1. Capturing the Moment: Inspiration and Techniques for the Modern Photographer_by Sarah Wilkerson
2. History of Photography: From 1839 to the Present__by Beaumont Newhall
Understanding Exposure: How to Shoot Great Photographs with a Film or Digital Camera by Bryan Peterson
3. A World History of Photography_by Naomi Rosenblum



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COURSE CODE: AR1151(6)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME- ELECTIVE-I	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY- ECPE										

ARCHITECTURAL PRINTING

SUBJECTIVE OBJECTIVE

- To familiarize the student with the importance of calligraphy.
- To introduce the students to different types of calligraphy tools
- To development perception and presentation of calligraphy skill

LEARNING OUTCOME

- Upon the completion of the course the student will understand the purpose, benefits of calligraphy and will be well versed with the calligraphy tools.

MODULE

Introduction about calligraphy its purpose and benefits.

Reason for calligraphy invention and its historic importance.

Famous calligrapher and their work

Tools used: quill, dip pen, ink brush, fountain pen, etc.

Presentation sheets of italic calligraphy, fancy calligraphy, gothic calligraphy, roman calligraphy, etc.

REFERENCE BOOKS

1. Lettering for architects and designers by Martha Sutherland
2. Learn Calligraphy by Margret Shepherd

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COURSE CODE:AR1152	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- WORKSHOP	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-PC	0	0	2	2	1	50	0	50	100	.

SUBJECT OBJECTIVE

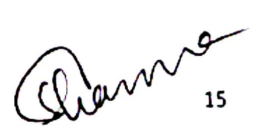
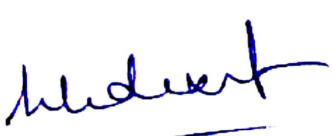
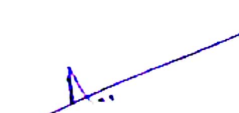
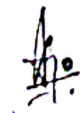
- To acquire the skill in constructing three dimensional forms using different model making materials and equipment in different scale.

LEARNING OUTCOME

- Understanding different type of materials and its feasibility in model making.

MODULE

- Presentation of modeling Skills by the use the tools with precision.
- Techniques for preparation of presentation models.
- General information and practice with different finishing material.


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COURSE CODE AR1153	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME COMMUNICATION SKILLS	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY PAEC/SEC	1	1	0	2	2	50	0	50	100	-

SUBJECT OBJECTIVE

- To develop in students communicative, writing and presentation skills.
- To enable them to record, report, analyze, evaluate and understand architecture, both in its theoretical and practical form.

LEARNING OUTCOME

- The students will be equipped with good spoken and written skills in english, awareness and skills about various intellectual gatherings and business presentation skills, advertising, journalism for media and architectural journalism.

MODULE-1

Revision Sentence, Phrase, Clause and parts of speech - Noun-gender, Number case, Pronoun-personal' reflexive, Emphatic, Demonstrative, Indefinite, Distributive, Reciprocal, Adjective, Article, Preposition, Conjunction and Interjection. Vocabulary, Word building and word formation, Phrases and idioms, Proverbs, Reading a dictionary, using a thesaurus.

MODULE-2

Composition and Comprehension Essay, Story and letter writing, Summarizing, Comprehension - unseen passages.

MODULE-3

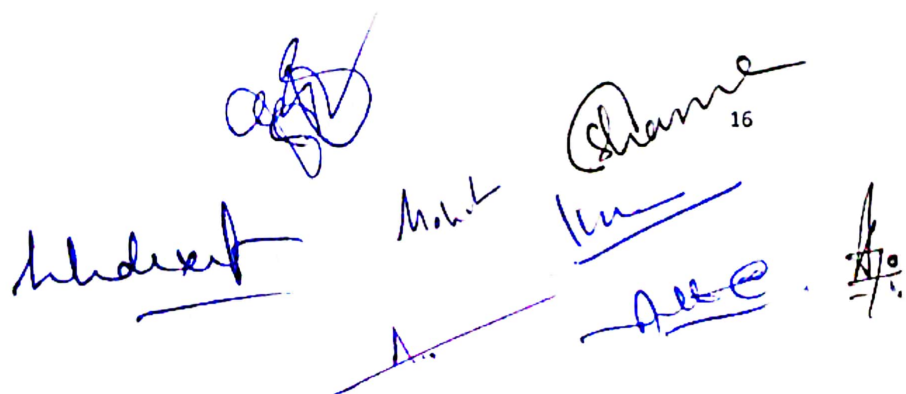
Introduction to types of communication, methods.

MODULE-4

Effective presentation strategies, effective speaking, types of speaking. Introduction of practical language lab. Presentation with electronic aids.

REFERENCE BOOKS

1. Raman Meenakshi and Sharma Sangeeta, "Technical Communications – Principles and Practices", Oxford University Press, New Delhi.
2. Effective technical Communication by M. Ashraf Rizvi Pub: Tata McGraw Hill (2009)
3. Developing Communication Skills by Krishna Mohan Pub: Mac Millan India Limited (2009)
4. An approach to Communication Skills by Indrajit Bhattacharya Pub: Dhanpat Rai Co. Pvt. Lt New Delhi (2007)
5. Handbook of practical Comm. Skills by Wright, Chrissie, Pub: Jaico Publishing house. Mumbai (2007)
6. The skill of Communicating by Bill Scott. Jaico Publishing House, Mumbai (2009).



COURSE CODE:AR1154	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-HUMANITIES	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-BS/AE	1	0	0	1	1	50	0	50	100	-

SUBJECT OBJECTIVE

- To expose the students to the relationship between man and environment.
- To familiarize the students with basic concepts, theories and issues of humanities and its relevance to architecture

LEARNING OUTCOME

- Upon the completion of the course the students will develop skill in writing and critical reading.
- To reason about being human and to ask questions about our world.
- To understand others through their language, histories and culture

MODULE-1

Introduction Story of Sociology, Sociology and Architecture, Basic concepts of society - Group, Community (Rural and Urban), Association, Institution.

MODULE-2

Culture and Society Concept of culture, Cultural identity, Cultural diversity, Cultural change.

MODULE-3

Process of socialization, types of society. Pre-modern - hunter's and gatherer's, pastoral agrarians and traditional states. Modern, third world / traditional society.

MODULE-4

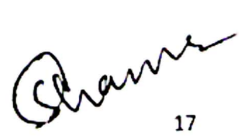
Social Demography Population growth, Population subsistence & Migration.

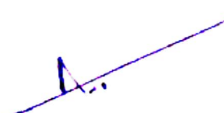
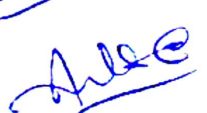
MODULE-5

Social Institutions Family, Marriage, Religion.
Social Infrastructure Education, Health, Recreation.

REFERENCE BOOKS

1. An Introduction to Sociology by Vidya Bhushan and D.R. Suchdeva
2. Sociology: A Systematic Introduction by Harry M. Jhonson
3. Indian Society and Culture – Continuity & Change by Nadeem Husnain
4. Principles of Population Studies by Asha A. Bhende & Tara Kanitkar


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COURSE CODE: AR1201	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME: ARCHITECTURAL DESIGN-II	2	3	0	5	6	40	60	--	100	6
COURSE CATEGORY: PC										

SUBJECT OBJECTIVE

- To understand human activity and spaces required for activities.
- To understand basic building components and their dimensions.
- To appreciate the elements in architectural design of single unit built-up structures.
- To explore Field trips to relevant sites for all assignments.

LEARNING OUTCOME

Upon the completion of the semester the students will

- Understand architectural design as a process and as a final product.
- Understand fundamentals of space, form and order as basic architectural skills. To involve students in a design project that will involve simple space planning and the understanding of the functional aspects of good design; to enable the students apply theoretical knowledge learnt in the previous semester in architectural design exercise.

MODULE-1

Anthropometrics Studies

Studies and introduction to human dimensions and functions, Space-activity relationships.

MODULE-2

Living Spaces and Building

Measuring, Drawing and dimensioning of simple building components. Designing for basic functions of human beings, e.g. living, eating, sleeping, cooking, bathing and toilet etc.

MODULE-3

Building Design

Design of mono-cellular-unit/structure on a level plane, designing of simple activity spaces, designing of multiple but simple activity spaces involving primarily horizontal circulation.

SUGGESTED STUDIO EXERCISES

Design of a small space single storied load bearing structures such as Milk booths, Bus shelters, Florists shop, Post-Office, Crèche, Dispensary etc.

Study models of different materials viz. paper, clay, wax, soap, wires, POP etc.

NOTE: Compilation of all architectural design projects in the form of report/fact-file. Submission should be done in hardcopy as well as in softcopy (PowerPoint presentation/Photoshop presentation)

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture: Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachussets.
3. "Neufert Architect's Data", Blackwell Publishing.
4. Donald Watson and Michael J. Crosbie, "Time – Saver Standards for Architectural Design, Technical Data for Professional Practice", McGRAW – HILL

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COURSE CODE-AR1202	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME-BUILDING CONSTRUCTION&MATERIALS-II	1	0	0	1	2	40	60	--	100	3
COURSE CATEGORY-BS&AE										

SUBJECT OBJECTIVE

- To acquaint the students to usage of building materials such as Timber and Hardware, Damp Proofing Courses and Cement Concrete.
- To familiarize the students with construction techniques for use of the above materials in building works. and joinery in carpentry
- To familiarize the student with the basic building construction practices on site/yard.

LEARNING OUTCOME

- Students will be able to explore on various building materials and construction techniques based on the performing standards and codes, wherein application of each material would be discussed in detail, both in the context of historical and contemporary methodology.
- Students will be able to know usage of new technology/materials.
- Students will be able to know the application of foundation, lintel, sunshades, window/door openings, walling material, and floor & flooring and culminating at roof and parapet wall.

SECTION – A, BUILDING MATERIALS AND SCIENCES

MODULE-1

Timber Classification, Characteristics, Defects, Preservation.
D.P.C Asphalt, Bitumen, Synthetic : , etc.

MODULE-2

Reinforced Cement Concrete: Types, Mixing, Curing, Water Cement Ratio, Qualities and Workability.
Reinforced Brick Work: Types, Mixing, Curing, Water Cement Ratio, Qualities and Workability.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

- To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
- To visit Timber depot/Ready mix concrete plants etc. for better understanding and submit report. WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

MODULE-3

Workshop / Construction Yard Practice: Practicing in construction yard by making the examples of brick masonry works, Carpentry works, etc.
Site Exposure: Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

MODULE-4

Brick Work
Arches in brick and stone, Elementary principles, Centering
Corbelling, Coping, String courses, Brick jalis
Special Bonds - Rat Trap Bond

MODULE-5

Timber: Elementary carpentry, Common joints
Details of framed, ledged, braced and batten doors.
D.P.C.: Horizontal and vertical D.P.C.

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LIST OF ASSIGNMENTS

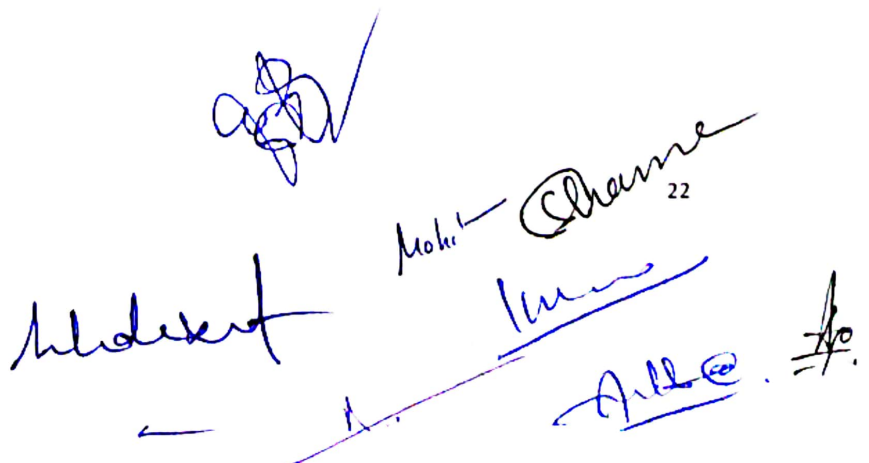
1. To study the various tools, equipments used in masonry and carpentry works.
2. To construct examples of brick masonry works in construction yard.
3. To construct examples of timber joints in workshop and study the various hardware commonly used in doors.
4. To survey construction work on site and submit report

CONSTRUCTION PLATES

1. To understand the terminology of arches and the various type of arches in brick.
2. To understand Corbelling, Coping, String Courses, Brick jalis.
3. To understand Special Bonds - Rat Trap Bond.
4. To understand various types of joints in timber.
5. To understand wooden Framed, Ledged, Braced and Batten Door.
6. To understand horizontal and vertical DPC for load bearing walls.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
3. The Construction of Buildings – Barry Volume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
7. Building Construction-Bindra&Arora.
8. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
9. Building Materials by SC Rangwala: Charotar Pub. House, Anand
10. M. Gambhir, NehaJamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill
11. Publishers, New Delhi, 2011.
12. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
13. National Building Code of India 2005, Bureau of Indian Standards, 2005.
14. Engineering Materials-Deshpande.
15. Engineering Material-Roy Chowdary
16. Designing with models – Criss. B. Mills.
17. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
18. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
19. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
20. Wenninger (Magrus.J.) Spherical Models, Cambridge University Press, 1979

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COURSE CODE:AR1203	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL STRUCTURE-II	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-BS&AE	1	1	0	2	2	40	60	0	100	3

OBJECTIVES

- To understand the forces in members the mix design of concrete and deflection in beams due to forces and forces in columns.
- To understand the different types of loads and supports in building structural components.

LEARNING OUTCOME

- To equip the students with necessary mathematical background to comprehend the aspects of design elements and structural stability.
- Students will able to understand Beams, columns

MODULE-1

Stresses in Trusses Definitions, Forces in members, Analytical method, Method of sections, Graphical method and Link polygon.

MODULE-2

Torsional Stress, Simple cases.

MODULE-3

Plain Concrete, Concrete mix, Curing and strength of concrete, Effect of temperature, Shrinkage, Fatigue.

MODULE-4

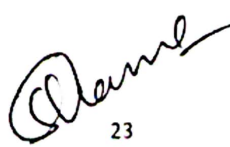
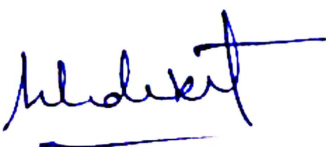
Deflection of Beams, Double Integration, Moment area, Method consistent deformation.

MODULE-5

Column Definition, End conditions, Buckling and critical loads, Slenderness ratio, Various column theories.

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku, "Elementary Structural Analysis".
5. Ramamarutham S., "Strength of Materials".


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COURSE CODE:AR1204	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL DRAWING-II	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-PC	1	1	3	5	4	40	60	0	100	3

OBJECTIVES

- To familiarize the student with theoretical, practical and pictorial aspects of architectural drawing.
- To develop perception and presentation of simple architectural forms and buildings.

LEARNING OUTCOME

- Students will be able to understand different types of projections.
- Students will be able to know perspective drawings and their representations.

MODULE-1

Metric Drawing- types, uses and advantages. Isometric, axonometric and oblique view.

Metric drawing and projection and their dimensioning.

Metric drawing of planes

Metric drawing of solids (prism, pyramid, cone, cylinder, frustum, truncated)

Metric drawing of circles and curved surface.

Metric drawing of simple & complex blocks.

MODULE-2

Perspective Drawing- Purpose and use.

Differences with metric projections.

Perspective elements (centre of vision, station point, picture plane, horizontal plane, horizon line, ground plane, ground line, perpendicular axis .etc)

Types of perspective (one point & two point)

Perspective of simple & complex blocks.

MODULE-3

Shades and Shadows

Value in shade & shadow

Shade and shadow in plan (of point, line & plane)

Shade and shadow in elevation (of point, line & plane)

Shade and shadow in plan & elevation (of point, line & plane)

Shade and Shadow in solid & complex blocks.

Short cut method for constructing shadow

Presentation Techniques in Sciography

REFERENCE BOOKS

1. I.H. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004.
2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.
3. N.D.Bhatt, Elementary Engineering Drawing (Plane and Solid Geometry), Charotar Publishing House, India.
4. George K.Stegman, Harry J.Stegman, Architectural Drafting Printed in USA by AmericanTechnical Society, 1966.
5. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964.
6. Introducing AutoCAD and AutoCAD LT – GeorgeOmura.
7. Mastering AutoCAD - GeorgeOmura 8. AutoCAD 2013 and AutoCAD LT 2013 "BIBLE" - Ellen Finkelstein.

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COURSE CODE: AR1205	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- VISUAL ARTS-II	I/S	T	P/V	HOURS	CREDIT	CIA	FSF	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-PC	1	0	2	3	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To develop free hand skills - Drawing people and transport from imitation, observation recapitulation.
- To develop Rendering Techniques – rendering architectural drawings.

LEARNING OUTCOME

- Students will develop art and graphic skills

MODULE-1

Free hand sketching and drawing: still life, human figure - free-hand average measurements of human body in different postures, its proportion and graphic representation, application in design of simple household and street furniture.

Sketching of water, stone and other natural textures.

4 wheelers like car, bus, truck etc.

MODULE-2

Advanced rendering skills and painting techniques like textures, materials, finishes using various equipments like poster colour, charcoal etc.

MODULE-3

Mural making and 3d sculpture: Mural with different materials on live scale, Sculpture with different materials like P.O.P, brick, cement, waste material etc.

REFERENCE BOOKS

1. Francis D. K. Ching, 'Architecture: Form, Space and Order', John Wiley & Sons, Incorporated, 2007
2. Arnold Dana, "Art History – A Very Short Introduction", Oxford University Press.
3. Stallabrass, Julian, "Contemporary Art – A Very Short Introduction", Oxford University Press.
4. Landscape Graphics: Plan, Section, and Perspective Drawing of Landscape Spaces by Grant Reid.
5. Rendering with pen and ink by Arthur L. Guptill.

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COURSE CODE: AR1206	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME: HISTORY OF ARCHITECTURE & CULTURE I (ANCIENT CIVILIZATION)	L/S	T	P/V	HOURS	CREDIT	CIA	ESF	P/V	TOTAL	Exam Hrs
COURSE CATEGORY: PC	1	1	0	2	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To inform about the development of architecture in the ancient western world and the cultural and contextual determinants that produced that architecture.
- To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate.
- To gain knowledge of the development of architectural form with reference to technology, style and character in the prehistoric world and in ancient Egypt, West Asia, Greece and Rome.

LEARNING OUTCOME

- The student will have an insight in to the architecture of prehistoric period and early civilizations.
- Social, religious and political character, construction methods, building materials and how they influenced their built form and settlement pattern shall be explained with suitable examples.
- Combined influence of geology, geography, climate, beliefs, religion and culture on the architecture must be highlighted so as to appreciate how architecture is embedded in place specific context.
- The study will enable students to do a comparative evaluation of various civilizations, appreciate chronological developments along the timeline and across geographies

MODULE-1

Prehistoric age

Introducing concepts of culture and civilization - Paleolithic and Neolithic culture - art forms and evolution of shelter - megaliths - agricultural revolution and its impact on culture and civilization with examples from Carnac and Stonehenge.

Birth of Civilization In reference to the Asia-minor region with nascent cities like Jericho, Catalhoyuk, and Hattasus etc.

MODULE-2

Ancient River Valley Civilizations Egypt: Landscape and culture of Ancient Egypt- history - religious and funerary beliefs and practices - monumentality tomb architecture: evolution of the pyramid from the mastaba – Great Pyramid of Cheops, Gizeh etc. Temple architecture: mortuary temples and cult temples - Temple of Ammon Ra, Karnak, Khons - Temple of Abu Simbel (Rock Cut) etc.

MODULE-3

Ancient River Valley Civilizations: Mesopotamia Evolution of the ziggurat - Ziggurat of Ur, Urnamu etc., Evolution of the palaces - Palace of Sargon, Khorsabad.

Rome Orders in architecture: Tuscan and Composite, Domestic architecture – structural forms, materials and techniques of construction.

Ancient River Valley Civilizations: Mesopotamia Urbanization in the fertile crescent - Sumerian, Babylonian, Assyrian and Persian culture, Evolution of city-states and their character, law and writing, theocracy and architecture - Ninveh, Khorsahbad, Marie, Babylon etc.

MODULE-4

Indus Valley civilization: Particularly in reference to the town planning principles exemplified with examples from Mohenjodaro and Harappa.

The Aryan civilization: With its emphasis on the Vedic town plan, its motifs and patterns.

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REFERENCE BOOKS

- 1 Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press, London, 1985.
2. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994
3. Pier Luigi Nervi, General Editor - History of World Architecture - Series, Harry N. Abrams, Inc. Pub., New York, 1972.
5. S Lloyd and H.W. Muller, History of World Architecture - Series, Faber and Faber Ltd., London, 1986.
8. Gosta, E. Samdstrp, Man the Builder, Mc.Graw Hill Book Company, New York, 1970.
7. Webb and Schaeffer; Western Civilisation Volume I; VNR: NY: 1962
10. Vincent Scully; Architecture; Architecture - The Natural and the Man Made: Harper Collins Pub: 1991.
9. Brown, P. (2010). Indian Architecture: Buddhist and Hindu period. Mumbai : D.B. Taraporevala Sons and Co.

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COURSE CODE AR1251(1)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME-ELECTIVE-II	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY-ECPE										

ARTS/PERFORMING ARTS PROJECT-II

SUBJECT OBJECTIVE

- To amalgamate Architecture and Culture and to discover how culture has its impact on Architecture.

LEARNING OUTCOME

- Students would be able to discover cultural Heritage with respect to Architecture.

MODULE

The students shall be asked to study the cultural heritage as well as the Contemporary Architecture and present it through physical and theatrical exercises individually and in groups. The final outcome would be to come out with the relationship of culture with Architecture.


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COURSE CODE: AR1251(2)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-II	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL COMPETITIONS-II

SUBJECT OBJECTIVE

- To provide a wide range of design solution for creating interest in role of architecture in national and international design competitions.

LEARNING OUTCOME

- Understanding of Contemporary Architecture.
- Development of idea of Team Work.
- The student will learn to formulate architectural concept and learn to work in time frame scenario.

MODULE-1

Students will participate in different national and international competitions introduced by Architects, Architectural colleges, firms and forums NGO's. Council of Architecture, NASA, Zonal NASA, etc.

The students will formulate the scheme under the guidance of faculty mentors and prepare basic design layout and competition requirements.

The students will have hands on practice of the rendering techniques.

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COURSE CODE: AR1251(3)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	U/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME- ELECTIVE-II	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY- LCPE										

FOREIGN LANGUAGE-II (FRENCH/GERMAN)

SUBJECT OBJECTIVES

- To explain the students to apply their knowledge of possessive & demonstrative adjectives in the present and near future tense, in conversation- using different groups of verbs.

LEARNING OUTCOME

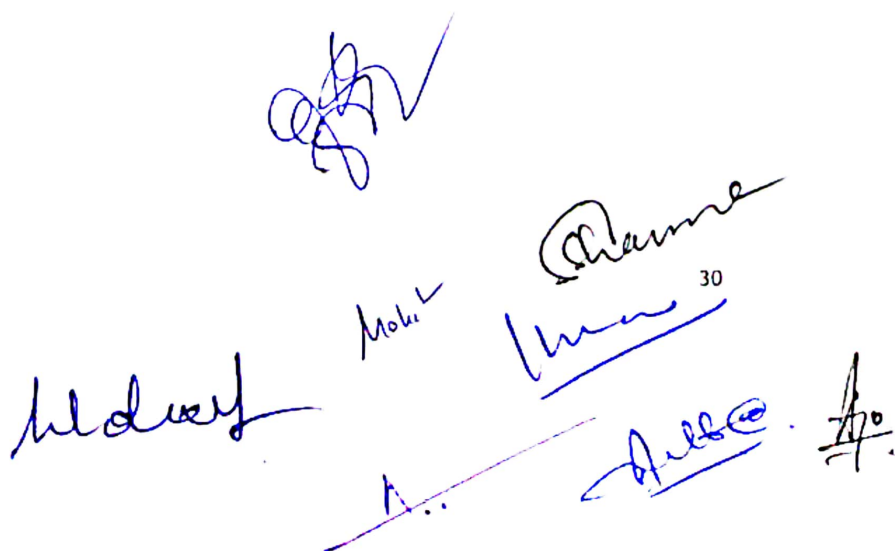
- After completing these modules, the students will be capable of constructing sentences with possessive and demonstrative adjectives in French/German.
- In addition they will be proficient in formulating meaningful sentences as they will be capable of applying their knowledge of all the verbs they have learnt during the session.
- They will also have an idea of French/German culture by studying about various French/German festivals.

MODULE

- Revision of earlier modules.
- List & usage of possessive adjectives Frame sentences using possessive adjectives
- Exercises based on possessive adjectives
- Family tree List and usage of demonstrative adjectives
- Frame sentences using demonstrative adjectives
- List & conjugation of pronominal verbs in present tense Frame sentences using pronominal verbs
- List & usage of irregular verbs
- Letter writing.

REFERENCE BOOKS

- A propos A1- Livre d'élève et Cahier d'exercice
- Apprenons la grammaire ensemble, Dictionnaire Larousse , Mon livre de français - 2, 450 exercices de grammaire
- Collins 3 in 1 French grammar, vocabulary & verbs
- Notes prepared by ASFL French faculty members



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COURSE CODE: AR1251(4)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME-ELECTIVE-II	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY-ECPE										

GRAPHIC DESIGN-I

SUBJECT OBJECTIVE

- There is a dramatic change in the way a graphic design in architecture works.
- This subject prepares students to take on all new context challenges advancements in the field of Visual Communication.

LEARNING OUTCOME

- An architecture student, in addition to a thorough grounding in design abilities and theoretical aspects, undertakes the study of the cultural and historical context in which architects need to function, as well as of the social and ethical factors that influence design decisions.
- The ultimate aim is to stimulate the development of independent critical judgment, sound research skills, the ability to think creatively and practice design as a professional.

MODULE

Color Terminology, Inspiration & Design Development, Mood, theme & color inter-relationship, Natural & Geometrical Form, Innovation in Design, Principles of Composition, Optical Illusion, Theme Development, Picture Analysis, Visual Logic, Good Design vs. Bad Design, Expression & Emotion, Exercises on imagination, Lateral Thinking, Story pictures, Developing Observation

REFERENCE BOOKS

1. Graphic Design: The New Basics by Ellen Lupton
2. Thinking with Type by Ellen Lupton
3. Making and Breaking the Grid: A Graphic Design Layout Workshop by Timothy Samara
4. The Elements of Graphic Design: Space, Unity, Page Architecture, and Type by Alex W. White

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COURSE CODE: AR1251(5)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME-ELECTIVE-II	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY-ECPE										

PUBLIC SPEAKING

SUBJECT OBJECTIVE

- To make students understand the process of communicating information to an audience and sharpening their critical thinking and verbal/non-verbal communication skills.

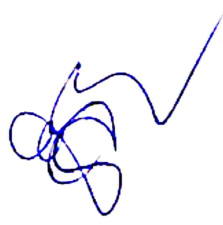
LEARNING OUTCOME

Upon completion of the syllabus, students will be able to

- Compare and contrast public speaking with casual conversation
- Develop an effective and purposeful speech
- Strategize to eliminate hesitation associated with public speaking

MODULE

Inculcate confidence with ample practice through mock interviews with the client (hypothetical).
Introduce various design problem briefs and hold group discussions in forms of debates


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COURSE CODE: AR1251(6)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-II	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL VOCABULARY

SUBJECT OBJECTIVE

- To train students to have a comprehensive knowledge of the terms used in architecture.
- To be able to connect the modern architectural elements with the classical architectural terms.

LEARNING OUTCOME

- The students will be well versed with the precise usage of technical terminology for the architectural element in discussion.

MODULE

Understand the symbiotic relationship between graphic and verbal communication of the architectural elements; by explaining the elements at hand with consolidation information. Recognize architecture objectively regardless of the subjective meaning or placement of the element at hand.

Understanding the value of architecture as a strong visual art, withholding most power when explained with a solitary word or image.

Architectural elements to be explained in a method comprehensive enough so that they can be easily reflected in a visual context; which will further enrich, explain, and complete the multidimensional nature of their meaning.

Understanding elements which are lend by the surrounding environment, which communicate information drawn out of graphical representations which students are exposed to, from books.

REFERENCE BOOKS

A visual Dictionary of Architecture by Francis. D.K.Ching

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- Bottom center: A signature that appears to be "Shame".
- Bottom right: A signature that appears to be "Ave".
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COURSE CODE-AR1252	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME-ARCHITECTURAL RESEARCH-I	1	1	0	2	2	50	0	50	100	-
COURSE CATEGORY-PC										

SUBJECT OBJECTIVE

- Understanding basic principles of any research with special reference to architectural research and applications.

LEARNING OUTCOME

- Students will be able to present their work and understand the current market and the industry standard through surveys and will be able to present the same through different presentation modes.

MODULE1

Introduction Importance of architectural research and writing.

MODULE-2

Book Reviews Basics of reviewing a book. Learn how to review architectural book/books

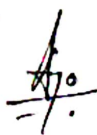
MODULE-3

Technical Writing Language, Impersonal and formal language, Elements of style, Techniques. Report and presentation on ongoing architectural project. The assignments preferably should be associated with the ongoing design assignments and design workshops could be clubbed with research also.

REFERENCE BOOKS

1. Raman Meenakshi and Sharma Sangeeta, "Technical Communications – Principles and Practices", Oxford University Press, New Delhi.
2. Research Methodology by C.R. Kothari.


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COURSE CODE:AR1253	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-SURVEYING & LEVELLING	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE CATEGORY-BS&AE	1	0	2	3	2	50	0	50	100	-

SUBJECT OBJECTIVE

- To equip students with the basic principles and theories which underlie the systematic study of topographic features, basic skills of landform analysis through map and field observation, need and role of Surveying and Leveling related to Architecture, preparation and interpretation of survey drawings, methods, tools and equipment necessary to carryout different survey procedures and recent advancements in the field of landforms survey and measurements.

LEARNING OUTCOME

- Students will be able to understand topographic features, landform through different Instruments.
- Students will be able to understand the importance of surveying in architecture.

MODULE-1

Introduction Definition, classification, principles of surveying.

Reading of survey Maps, understanding of features and undulations of Ground. Scales used in Plotting.

Study of land forms, topography and contours, slope analysis, grading process; graphic representations of landforms.

Units of measurement, Scale, Signs convention.

MODULE-2

Chain Survey Instruments used, Types of chain, Measurements in horizontal plane, linear measurements with chain & tape, setting-out & survey stations, survey accessories, survey lines, open & closed traverse, chaining & offsetting, direct & indirect ranging, log-books, field boundaries, field area estimation. Compass survey, bearings & angles, local attractions, errors in compass survey.

MODULE-3

Plane Table Survey Plane table and accessories, Methods of plane table survey, Radiation, Intersection, Traversing and resection, Two point and three point problems and their solution. Leveling Definition, Classification, Booking and reduction of levels, Profile & cross section leveling, Errors in leveling.

Theodolite Study of instruments, Definition of different terms, Temporary adjustments, Uses, Measuring horizontal and vertical angles, Method of repetition, Extension of lines.

MODULE-4

Contouring Characteristics of contours, Direct and indirect methods of contouring, Interpolation, Uses of contours, Calculation of area & volume

Compass Survey The prismatic compass, Surveyor compass and its construction and uses, Reduced and whole circle bearing, Magnetic declination, Effect of local attraction.

MODULE-5

Traverse Survey Introduction and different methods of traversing, Error of closure.

Total Station Survey Introduction, Working principle of total station and its use. Use of software for different applications.

Photogrammetry Definition, Principles and application of photogrammetry in surveying.

LIST OF ASSIGNMENTS (Field Exercises & Drawings)

- To find out horizontal distance between two points and plotting the details on lateral side of chain line using chain, tape, ranging rod & cross staff etc.

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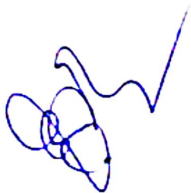
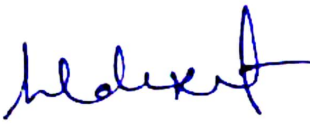
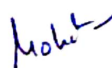
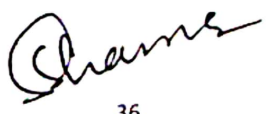
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2. Two point problem & three point problem.
3. Making L-section & Cross section of a profile.
4. Making grids on ground using theodolite & taking spot level & drawing contour lines.
5. Making a regular polygon in field and finding error of closure using different equipment.
6. Preparing topographical map of given area using total station.
7. Study various aerial images.

REFERENCE BOOKS

1. Surveying Volume I & II by Dr. B.C. Punmia
2. Surveying and Leveling (Part – 1) by Kanetkar TP and Kulkarni SV
3. Surveying Volume -1 by Dr. K.R.Arora
4. Surveying Volume I and II by Dr. S.K. Duggal.





COURSE CODE: AR1254	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Exam Hrs
COURSE NAME-NTCC-I (EDUCATIONAL TOUR / DOCUMENTATION+WORKSHOP)	0	0	0	0	1	50	0	50	100	-
COURSE CATEGORY- PAEC/PAECC										

SUBJECT OBJECTIVE:

- To Concepts and ideas through critical thinking.
- To Relate their own ideas with the global scenario and demand.

LEARNING OUTCOME:

- Students will be able to integrate and practice from field works, workshops.

MODULE:

The winter project/ workshop gives the students an opportunity to develop fundamental design skills through hands-on projects based on the curriculum of previous semester. The students will explore and experiment with different techniques in their individual project. Maintaining proper documentation and record through portfolio of their individual creative work.

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SEMESTER III

COURSE CODE:AR1301	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL DESIGN-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	2	3	0	5	6	40	60	0	100	12

SUBJECT OBJECTIVE

- To explore the interrelationship between human behavior and space in a small environment, including, volume of space, shape, form, function and materials.
- To understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expression.
- To assimilate the modifying spatial qualities of indoor & outdoor spaces due to varying configurations.

LEARNING OUTCOME

- The students will be trained to understand the various issues which arise while designing a double storied RCC building.
- Students are encouraged to understand the interrelationship between human behavior and space in a detached residential building for a small joint family.
- They are expected to explore through their design exercise, volume of space, shape, form, function and material sensitivity.

Module-1

Introduction:

The students are expected to design a low rise building in a specific site, for a small Indian joint family in urban setting. The projects investigate the study of built form, function, activity, and its relationship to the site and surroundings, material, and construction technology.

Introduction of short span structural systems that inspire form oriented built forms.

Module-2

Introduction to design considerations:

Introduction to design considerations for natural light, ventilation, etc surrounding physical environment in creation of simple multi-cellular architectural forms.

Analysis of the selected settlement with relationship to human scale, activity, space & form & other parameters pertaining to spatial aspects.

Module-3

Design Exercises:

Lecture on interpreting spatial configuration for specific design programme. Configuration of spaces preferably on single floor organized on basis of functional, geometric and visual order.

SUGGESTED STUDIO EXERCISE

1. **Time problems** like LIG Houses (1DAY)
2. **Minor Problems** like design of college canteen, petrol pump to be structural system based. (1 WEEK)
3. **Major Problems (2 IN NUMBER)** like Design of buildings like Farm house, Tourist Cottages, neighborhood shopping centre etc.
4. Study tours to relevant urban destinations for primary documentation.

REFERENCE BOOKS

1. Ching, Francis D.K. Form Space & Order.
2. Rappoport, Amos. House Form & Culture.
3. Oliver, Paul. Shelter & Form.

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4. Fathy, Hasan. Natural energy & vernacular architecture.
5. Housing projects by Geoffery Bawa, Charles Correa, B.V. Doshi among others
6. Antoniades, C. Anthony, "Epic Space: Towards roots of Western Architecture", John Willey & Sons, 1992
7. Schulz, N. C. (1985). The concept of dwelling. New York : Rizzoli International Publications.
8. Unwin S. (2010). Twenty Buildings every Architect should understand. New York : Routledge

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COURSE CODE:AR1302	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-BUILDING CONSTRUCTION&MATERIAL-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	1	0	0	1	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To acquaint the students to usage of building materials such as Variety of Stone, Surface finishing, Painting and Polishing& Roof coverings (conventional).
- To familiarize the students with construction techniques for use of the above materials in building works.
- To familiarize the student with the basic building construction practices on site/yard.

LEARNING OUTCOME

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will have knowledge of construction details as applicable to Indian climatic conditions

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1

Stone:

Classification, Availability, Characteristics and Uses.

Surface:

(Wall)Finishing & Painting and Polishing

Types and application of Plasters, Jointing and Pointing, Cladding.

Preparation of variety of surfaces, Application of various coats.

Finishes – Lime / Colour wash, Dry distemper, Oil bound distemper, Cement paints, Acrylic emulsions, Synthetic enamels, Wall textures etc.

Polishes and Varnishes.

Module-2

Roof Coverings (Conventional):

Clay Tiles (Country, Allahabad, Mangalore tiles etc.), Stone Slating, Shingles, Thatch.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit stone quarries and glass, ceramic, paints etc. Factories for better understanding and submit report.
3. To construct examples of brick& stone masonry works in construction yard.

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-3

Workshop/Construction Yard Practice:

Practicing in construction yard by making the examples of stone masonry works, plastering, jointing, pointing and painting, timbering of shallow trenches and door samples.

Site Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

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Module-4

Elementary Stone Masonry, Types of joints.

Door(Timber):

Window / Ventilator(Timber):

Module-5

Complete process of laying of terracing with provisioning of Gola & Khurra etc. - Lime concrete, Mud phaska with brick tiles, Brick coba.

Timbering of shallow trenches.

1. To study the various tools, equipments used in stone masonry finishing works.
2. To study the various tools, equipments used in glass works.
3. To study the various tools, equipments used in painting works.
4. To prepare scaled model of door in workshop.
5. To survey construction work on site and submit report.

1. To understand square stopped ends of Random, Course and Ashlar stone masonry.
2. To understand variety of Panelled door shutters and their details in timber.
3. To understand Mosquito proof door shutter and its details in timber and jaali.
4. To understand variety of windows & ventilators and the details of window frame and glazed shutter in timber and glass.
5. To understand the application of roof terracing with various details.
6. To understand Timbering of shallow trenches in various soil types.

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
4. The Construction of Buildings – Barry Volume I, II, III and IV
5. Chudley, Roy, "Construction Technology", Longman, 2005.
6. Building Construction_Mitchell (Elementary and Advanced)
7. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
8. Building Construction-Bindra&Arora.
9. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
10. Mitchell's Structure & Fabric-II
11. Don A. Watson, Construction Materials and Processes, McGraw Hill Co.
12. Building Materials by SC Rangwala: Charotar Pub. House, Anand

sses, McGraw Hill Co.
House, Anand

13. M. Gambhir, NehalJawal, Building Materials Products, Properties and Systems, Tata McGraw Hill Publishers, New Delhi, 2011.
14. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
15. National Building Code of India (Latest Edition), Bureau of Indian Standards.
16. Engineering Materials-Deshpande.
17. Engineering Material-Roy Chowdary
18. Designing with models – Criss. B. Mills.
19. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
20. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
21. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.

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COURSE CODE:AR1303	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-STRUCTURES - III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	1	1	0	2	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To understand the analysis of indeterminate structures and their application in structural design and analysis.

LEARNING OUTCOME

- The students will familiarize with the effects of transverse forces such as shear force & bending moment in beams; determination of SF & BM in simple beams under different loading.

Module-1

Introduction to Structure Analysis

Introduction, Determinate Structures, Indeterminate structures

Module-2

Elastic Theorems & Energy Principals

Introduction, Potential energy, General principles, Principles of superposition.

Module-3

Fixed & Continuous Beams and Portal Frames

Introduction, Analysis of continuous beams and portal frames, Reactions at the supports, Effects of sinking of supports.

Module-4

Fixed & Continuous Beams and Portal Frames (continued)

Analysis of continuous beams and portal frames by 3M equation, Slope deflection method, Moment distribution method

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku, "Elementary Structural Analysis".
5. Rama Armarutham S., "Strength of Materials".
6. C.K. Wang, "Theory of Structures".

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COURSE CODE:AR1304	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- ARCHITECTURAL DRAWING - III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	1	1	3	5	4	40	60	0	100	3

OBJECTIVES

- To develop greater perception of complex Architectural forms and buildings.
- To develop the skill of making perspectives of complex buildings and Rendering them in different media.

LEARNING OUTCOME

- Students will be able to understand different types of presentations techniques by manual and by using software (Autocad or Photoshop)
- Students will be able to know perspective drawings with sciography.

Module 1

1 point perspectives with Sciography :

- 1 point perspective of Line & planes with sciography in presence of point source and sun source of light.
- 1 point perspective of solid (prism & pyramid) with sciography in presence of point source and sun source of light.
- 1 point perspective of complex boxes with sciography in presence of sun source of light.
- 1 point perspective of exterior of a building (residence) by measuring point method with sciography in presence of sun source of light .
- 1 point perspective of interior of a building (residence) by measuring point method with sciography in presence of point source of light.

Module 2

2 point perspectives with sciography:

- 2 point perspective of Line & planes with sciography in presence of point source and sun source of light.
- 2 point perspective of solid (prism & pyramid) with sciography in presence of point source and sun source of light.
- 2 point perspective of complex boxes with sciography in presence of sun source of light.
- 2 point perspective of exterior of a building (residence) by measuring point method with sciography in presence of sun source.
- 2 point perspective of interior of a building (residence) by measuring point method with sciography in presence of point source of light.

Module 3

Manual Rendering techniques and presentation techniques using Autocad or Photoshop:

Introduction to different textures and finishes in plan and elevation .

Graphical representation of furniture, automobiles, human figure etc. in plans and elevation and 3-Dimension.

Preparation of presentation drawings of small buildings, through Plans, Elevation, Section, Site plan etc., using various rendering techniques and media, incorporating sciography for creating depth.

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Presentation drawing of small building (residence) through Site Plan, ground floor plan, terrace plan, 4 side elevation and 2 section etc., using **AUTOCAD** or **PHOTOSHOP**, incorporating sciography for creating depth in building.

REFERENCE BOOKS

1. Bernard Alkins -147, Architectural Rendering, Walter Foster Art Books, 1986.
2. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, NY 1975
3. IH. Morris, Geometrical Drawing for Art Students -Orient Longman, Madras, 2004.
4. Peter Schiessl : Corel DRAW 2020 - Training Book with many Exercises
5. Robin Whalley : Photoshop Layers: Professional Strength Image Editing

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COURSE CODE:AR1305	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-VISUAL ARTS- III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	1	0	2	3	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To develop an appreciation of Indian Arts & Crafts among the Students.
- To strengthen the skill of architectural rendering.
- To develop the skills to design smaller elements of building based on Indian Arts.

LEARNING OUTCOME

- Students will be able to present their work in different media and present works of masters of Modern Architecture.

MODULE-1

Indian Art:

History of Indian Art Lectures on outline History of Indian Art, from earliest times to Mauryan Period.

Module-2

Indian Art (Mughal Period):

History of Indian Art Gupta Period to Mughal Period.

Module-3

Indian Art (British Period):

History of Indian Art Company Style (British Period).

Module-4

Exercises:

Design of various objects

Designing of gate, grill, railing, jaali, soffit treatment, fascia treatment, column pediment, pedestal in suitable materials and period.

REFERENCE BOOKS

1. ABC of Indian Art- J.F.BLACKER.
2. A concise History of Indian Art - ROY C. CRAVEN.
3. Maurya and Post Maurya Art- NIHAR RANJAN RAY
4. The Story of Indian Art- S.K. Bhattacharya

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 A. S. K. Bhattacharya
 J. F. Blacker
 Roy C. Craven
 Nihar Ranjan Ray
 S. K. Bhattacharya

2. Giles Henry Rupert Tillotson (ed.), Paradigms of Indian architecture: Space & Time in Representation & Design, Psychology Press, 1998.
3. Adam Hardy, Indian temple Architecture- form & transformation, Abhinav Publications, 1995.

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COURSE CODE:AR1307	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE NAME- BUILDING SERVICES - I (WATER SUPPLY & SANITATION)										
COURSE CATEGORY-BS&AE	1	1	0	2	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To equip the students of architecture about the building services related to water supply and building sanitation, so as to enable them to comprehend the subject thoroughly and integrate the learning into architectural design.

LEARNING OUTCOME

- Students will be able to understand principles of water supply and sanitation
- To familiarize the student with plumbing bye laws as per BIS.

Module-1

Water Supply:

Water Supply Introduction, types of sources, yield & spacing of wells, intakes, pumping and transportation of water. Treatment of water, qualities of potable water. Domestic water distribution system, reservoirs, supply system layouts, Pipe appurtenances, pumps, pumping plants, overhead tanks, water demand calculations. Building service connection, Ferrules, Water meters. Layout of domestic water piping systems, joints, fittings and valves. Cold & hot water lines in buildings, Water supply to high rise buildings: problems encountered & systems adopted.

Module-2

Sanitary Engineering:

Purpose and Principles of sanitation, collection and disposal of various kinds of refuse from buildings. Garbage and sewage disposal. Methods of carrying refuse, systems of refuse disposal, their principles. Plumbing definitions and related terms, plumbing systems (one pipe, two pipe etc), House drainage system, Drainage of sub-soil water. Inspection chambers, Manholes, Sub-drains, culverts, ditches and gutters, drop inlets and catch basins, roads and pavements, storm overflow/regulators. Sanitary appliances, Traps their variety, Pipes and joints, Sanitary pipes works below and above ground level.

Module-3

Plumbing:

Basic principles of Plumbing, need, scope, terminology. Specifications and installation of sanitary fittings like wash basins, water closets, urinals, bidets, sinks, etc in buildings. Uses of gate valve, float valve, flap valve, ball valve, flush valve, etc, different types of taps, faucets, stop cocks, bib cocks, 'P', 'Q', 'S', floor/bottle traps used in buildings.

Module-4

Design of Plumbing Systems:

Design of Plumbing Systems Design considerations on drainage scheme. Planning of bathrooms, lavatory blocks and kitchen in domestic and multi-storeyed buildings. Preparation of plumbing drawings, symbols commonly used in these drawings.

REFERENCE BOOKS

1. The construction of building by Barry-vol.-5
2. Water supply and Sanitation by Charanjit Shah
3. Water supply & sanitary Engineering by S.C.Rangawala
4. Water supply & sanitary Engineering by S. K.Hussain

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Bottom left: *A.* and *Sham*

Bottom right: *Sham*

5. Birdie, B. S. (1996). Water supply and Sanitary Engineering. Dhanpat Rai and Sons. & National Building Code of India. (2005).
6. Punmia, B. C., Jain, A. K. and Jain, A. K. (1995). Water Supply Engineering. New Delhi : Laxmi Publications.
7. Punmia, B. C., Jain, A. K. and Jain, A.K. (1998). Waste Water Engineering. New Delhi : Laxmi Publications.
8. Rangwala, S. C. (2005). Water Supply and Sanitary Engineering. Charoter Publishing

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COURSE CODE:AR1351(1)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ART/ PERFORMING ARTS PROJECT-III

SUBJECT OBJECTIVE

- To embed stronger and more enduring means of evoking architecture and culture.

LEARNING OUTCOME

- Students will perform different Co-curricular activities in coordination with the stream of architecture being taught in their respective semesters.

MODULE

Exercises on topic of Architectural interest like debate ,skits ,extempore, theatrical exercises individually or in groups to develop their communication skills, using theater as a medium. It will also train the students towards team building.

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COURSE CODE:AR1351(2)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL COMPETITIONS-III

SUBJECT OBJECTIVE

- To provide a wide range of design solution for creating interest in role of architecture in national and international design competitions.

LEARNING OUTCOME

- Understanding of Contemporary Architecture.
- Development of idea of Team Work.
- The student will learn to formulate architectural concept and learn to work in time frame scenario.

MODULE

Students will participate in different national and international competitions (preferably on projects upto the scale as mentioned in the syllabus of the Architectural Design of that year)- introduced by Architects, Architectural, colleges, firms and forums NGO's. Council of Architecture, NASA, Zonal NASA, etc.

The students will formulate the scheme under the guidance of faculty mentors and prepare basic design layout and competition requirements.

The students will have hands on practice of the rendering techniques.

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COURSE CODE:AR1351(3)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

FOREIGN LANGUAGE-III (FRENCH)

SUBJECT OBJECTIVE

- To explain the students to apply their knowledge of possessive & demonstrative adjectives in the present and near future tense, in conversation- using different groups of verbs.

LEARNING OUTCOME

- After completing these modules, the students will be capable of constructing sentences with possessive and demonstrative adjectives in French. In addition they will be proficient in formulating meaningful sentences as they will be capable of applying their knowledge of all the irregular verbs they have learnt during the session. They will also have an idea of French culture by studying about various French festivals.

MODULE

- About oneself, Revision of earlier modules.
- Family tree The classroom Lifestyle ,My daily routine
- At home At the university Personal activities Preparations to attend a party
- At the bus-stop Letter to a friend French culture
- The life and family of Paul Lenoir Evening Plans
- Festivals of France

REFERENCE BOOKS

- A Propos - A1, Livre de l'élève et Cahier d'exercices
- Apprenons la grammaire ensemble, Dictionnaire Larousse, Mon livre de français - 2, 450 exercices de grammaire
- Collins 3 in 1 French grammar, vocabulary & verbs
- Notes prepared by French faculty members

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COURSE CODE:AR1351-04	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

SCALE AND PROPORTION

SUBJECT OBJECTIVE

- To Understand scale and proportions in respect to Architecture through the scale of measurements and proportions of the human body .

LEARNING OUTCOME

- Students will be able to visualize architectural elements in respect to scale and proportion.

MODULE

Scale, its importance in architecture and its types.

Importance of Proportion in Architecture.

The Golden Ratio in Art and Architecture.

Le Corbusier's Modulor System.

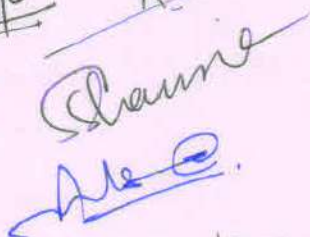
Anthropometry (study of the size and proportions of the human body), The sizes and shapes of building elements and components in respect to the human dimensions.

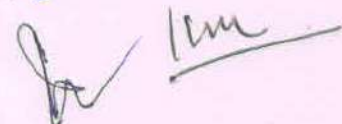
Case Studies and exercises in relevance to scale and proportion, and its documentation.

REFERENCE BOOKS

- "Neufert Architect's Data", Blackwell Publishing.
- Donald Watson and Michael J. Crosbie, "Time – Saver Standards for Architectural Design, Technical Data for Professional Practice", McGRAW – HILL
- Scale and Proportion by Steve Metzger

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COURSE CODE:AR1351-05	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

RURAL ARCHITECTURE

SUBJECT OBJECTIVE

- To create awareness about vernacular Housing Techniques used in Rural areas.
- To create a knowledge base about the Government Initiatives and Interventions in the field of Rural Development

LEARNING OUTCOME

- Upon the completion of the course the student will understand issues and Concerns of Rural Housing and have the knowledge about various Government Schemes, Programmes for Rural areas.

MODULE

Rural house types from various states in India.

Low-Cost Construction Materials, Technology and Services used in various parts of the country for Rural Housing.

Use of Locally available Materials in various regions. Community based Rural Planning.

Understand rural institutions and Organizations - rural banks, co-operatives, marketing mass media and communication, micro-finance, SHG and rural credit access.
Case Studies.

REFERENCE BOOKS

1. S.N. Prajapati, "Rural Development in India"
2. Manie Ahuja, "Rural Development: Indian Context"
3. GPH Panel of Experts, "Rural Development Programmes (MRD)"
4. B.D.Sharma, "Rural Development and Policies"
5. Vinod Kumar, "Rural Development", ABD Publishers
6. B.K.Pandey, "Rural Development -Towards Sustainability"
7. P. Gopinadhan Pillai, "Rural Development in India", Neha Publishers and Distributors, 2008

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COURSE CODE:AR1351(6)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- ELECTIVE - III	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

TENSEGRITY STRUCTURES

OBJECTIVES

- To develop greater perception of complex spatial structures .
- To understand the details of tensile & compression structures & forces in action.

LEARNING OUTCOME

- Students will be able to understand the fabrication or construction process of Tensegrity structures.

Module

Introduction and Concept

Introduction to 3D truss system, History of Tensegrity, Tension and Compression members, solid section bars , string and cable elements, concepts of compression and tension.

Characteristics and Benefits

Stable self equilibrated state, components, continuous tension & discontinuous compression, boundary surface of Tensegrity structures, stabilization of structure & efficiency, Tensegrity simplex, mechanical behavior.

Structural Applications & Case Studies

Applications of Tensegrity structures, Case studies & significant examples.

REFERENCE BOOKS

1. René Motro : Tensegrity: Structural Systems for the Future
2. Buntara S. Gan : Computational Modeling of Tensegrity Structures: Art, Nature, Mechanical and Biological Systems
3. Mauricio C. de Oliveira and Robert E. Skelton :Tensegrity Systems

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COURSE CODE:AR1352	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL RESEARCH-II	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	1	0	2	3	2	50	0	50	100	3

SUBJECT OBJECTIVE

- To understand basic principles of any research with special reference to architectural research and applications.

LEARNING OUTCOME

- Students will be able to understand referencing and techniques.

MODULE

Detailed Referencing:

Introduction to Styles of Referencing.

Technical Writing Referencing Techniques.

Manage resources, insert citation, bibliography.

Book Review:

Review of book and its presentation.

REFERENCE BOOKS

1. Raman Meenakshi and Sharma Sangeeta, "Technical Communications – Principles and Practices", Oxford University Press, New Delhi.
2. Kate L.Tourabian, A manual for Writers of Research Papers, Theses and Dissertation, 8th edition.
3. Joseph Gibaldi, MLA handbook for Writers of Research Papers.

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COURSE CODE:AR1353	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- NTCC – II (SUMMER ASSIGNMENT)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PAEC/PAECC	0	0	0	0	1	50	0	50	100	—

OBJECTIVES

- To prepare students to integrate theory and practice from courses to field works in the form of a architectural planning project.

LEARNING OUTCOME

- The student will able to develop and improve their planning concepts and ideas through critical thinking
- Understand inception, scheduling, execution and dissemination in the context of live architectural planning through field works.

Module

- The Students are addressed in a common briefing session about the Summer Project which introduces them to the problem, issues, requirements, timeline and deliverables for the projects going to be introduced in the upcoming semester
- The students are introduced to the project on a holistic level and briefed about the study area and its characteristics. Then they are briefed about rules of social and ethical behavior to be followed while collecting data from primary as well as secondary sources. Each student is allotted a particular aspect of planning to focus on during the course of the project.
- The student is responsible for his/her individual aspect and has to submit a report on the same at the end of the project. Based on the student's interest and relevance of the same in varied planning applications, the student works on the aspect in a professional manner as per the practical applications of the same. The integration of the various aspects allotted to students culminate towards the entire project report and dissemination of the project.

Guidelines for Project Report

The report has to be not less than 15 pages or greater than 45 pages. The report has to be spiral bound. The maps should be properly scaled and labeled with necessary legends and detailing.

Language	English
Paper Size	A4
Margin	The left and right margin of 1.25 inches. The top and bottom margin of 1.00 inch
Typing	On both sides of the page. The text will follow line spacing of 1.5 lines and double justified.
Arrangement of Contents	Every NTCC Project Report should have three parts: the pre pages, the main text and the reference material. The following is the order: - Preliminary Pages: - Title page - Declaration - Faculty Guide Approval Page - Acknowledgement - Table of Contents - Text: Chapters & sub-sections - Area Context, Data Collection, Analysis, Conclusions, Recommendations & Proposals - Reference Materials: Appendix

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Tables & Figures	These shall be placed immediately after the paragraph that contains it. Each table & figure has to be numbered consecutively within chapters.
References	These have to be listed alphabetically. Retrievable data must be listed in references. Personal interviews/ raw data shall not appear in the reference list.
Appendices	Contains supplementary of illustrative material on explanatory data to be incorporated in main document as per the order of appearance in the document.

The Break up (components and their weightage) of continuous internal assessment are given as under :

S.No.	Title	CIA (MM 50)
1.	Design Detailing	5
2	Final Report	5
3.	Presentation	5
4	Case Studies & Literature Review	5
5	Plans (key plans /measured drawings/schematic plans,etc.)	10
6	Field Visit (supported by images)	10
7	Presentation & Communication	10

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SEMESTER IV

COURSE CODE:AR1401	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL DESIGN IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	2	3	0	5	6	40	60	0	100	12

SUBJECT OBJECTIVE

- Understanding basic principles of grouping of units or buildings.
- Understanding architecture as with focus on the use of local materials and construction techniques.
- Understanding role of built (mass) and open spaces (void) in the overall design configuration.

LEARNING OUTCOME

- The students will be enabled to employ and integrate clustering of buildings and creation of open spaces.
- The students will understand designing to the context of vernacular architecture.

Module-1

Introduction and study:

Understanding user generated factors for grouping; security, segregation, convenience, privacy, sharing, user-density etc. Study of mass and space within a cluster; length: width: height ratios of built mass and open spaces and their relationship.

Module-2

Analysis:

Understanding dynamics of public buildings; activities of visitors and regular users. Providing for daily/regular, monthly, annual events and activities. Relating space and individual; human scale and urban scale. Societal aspirations for aesthetics and form. Role of building services, construction methods, bye-laws, codes (NBC etc.) on building and site design. Exercises on studies for grouping of activities in a public building

Module-3

Design:

Understanding vernacular architecture as an appropriate demonstration of geography and culture responsive architecture. Study of traditional designs and practices and upgrading same for use in contemporary situations.

Design of a simple building for public activity, in a non-urban setting, (i.e. without urban regulatory controls).

SUGGESTED STUDIO EXERCISES

1. **Time problems** like MIG Houses. (1DAY)
2. **Minor/Short Problems** like design of Panchayati bhawan, small forest resort, primary health centre, old age home. (1 WEEK)
3. **Major Problems** like Design of buildings like School, Community training centres.
4. Study tours to relevant destinations for documentation of vernacular architecture.

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport - Publications, Massachusetts.
3. Ahmet Hadrevic, "Structural Systems in Architecture", Book Serj Publishing, South Karolina.
4. Vernacular Traditions: Contemporary Architecture, Ashok Lall

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COURSE CODE:AR1402	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-BUILDING CONSTRUCTION&MATERIAL-IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	1	0	0	1	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To acquaint the students to usage of building materials such as Timber products, Glass, Ceramics and Adhesives.
- To familiarize the students with construction techniques for use of the above materials in building works.
- To familiarize the student with the basic building construction practices on site/yard.

LEARNING OUTCOME

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will be construction details as applicable to Indian conditions.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1

Timber Products:

Variety of Plywood, Ply-board, Block board, Particle board, Wood wool cement board, Fiberboard, Compressed straw board, Cement fiberboard, Mineral fiber board, Veneers, Laminates etc.

Module-2

Glass & Ceramics:

Glass - Translucent, Transparent and Special glasses, Glass bricks.

Patch fittings for glazed partitions and shutters.

Ceramics - Terracotta, Faience, Fireclay, Stoneware, Earthenware, Vitreous China, Porcelain.

Adhesives:

Natural Adhesives – Animal, Casein, Bituminous.

Thermoplastic Adhesives – Polyvinyl Acetate.

Thermosetting Adhesives & Plastics - Urea Formaldehyde, Phenol

Formaldehyde, Melamine Formaldehyde, Resorcinol Formaldehyde, Epoxide Resins.

Rubber Adhesive.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit timber products, adhesives factory etc. for better understanding and submit report.

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WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-3

Workshop/Construction Yard Practice:

Practicing in construction yard / workshop by making the examples of partitions and paneling samples, Timbering of shallow trenches.

Site Exposure Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-4

Door(Timber Products):

Types and details of Flush door shutter with finishes.

Door(Operational Mechanism):

Complete understanding of operational mechanism (automatic and manual) of variety of Sliding door shutters, Sliding-folding door shutters and Revolving doors shutters.

Partition:

Terminology, Partitioning methods with use of different materials e.g. Timber and Timber Products, Clay and Terracotta Brick / Block, Pre-cast Concrete Block, Wood Wool Cement Board, Compressed Straw Board, Glass and Glass Brick.

Module-5

Panelling(Timber & Timber Products):

Terminology, Panelling methods with use of materials e.g. Timber and variety of timber products.

Brick Work Temporary Constructions:

Shoring (Raking, Flying and Needle).

Underpinning.

LIST OF ASSIGNMENTS

1. To study the various tools, equipments used in roof laying works.
2. To construct examples of partition and panelling in construction yard / workshop.
3. To survey construction work on site and submit report.

CONSTRUCTION PLATES

1. To understand the application of variety of flush door shutters and their details.
2. To understand the application of variety of sliding door shutters and their details.
3. To understand the application of variety of sliding folding door shutters and their details.
4. To understand the application of partitions in building interiors with using timber, timber products and glass etc. along with their details.
5. To understand the application of panelling in building interiors with using timber and timber products along with their details.
6. To understand the application of temporary construction in buildings.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.

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3. The Construction of Buildings – Barry Volume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction_Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
7. Building Construction-Bindra &Arora.
8. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
9. Mitchell's Structure & Fabric-II
10. Principle & Practices of Heavy Construction: Smith & Andres
11. Don A.Watson, Construction Materials and Processes, McGraw Hill Co.
12. Building Materials by SC Rangwala: Charotar Pub. House, Anand
13. M. Gambhir, NehaJamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill Publishers, New Delhi, 2011.
14. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
15. National Building Code of India (Latest Edition), Bureau of Indian Standards.
16. Engineering Materials-Deshpande.
17. Engineering Material-Roy Chowdary
18. Designing with models – Criss. B. Mills.
19. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
20. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
21. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.

M. K. Datta

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Q. 12 Q. 13
Q. 14 Q. 15
Q. 16 Q. 17

COURSE CODE:AR1403	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-STRUCTURES - IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	1	0	2	3	2	40	60	0	100	3

OBJECTIVES:

- To understand the basic principles of R.C.C. structures and soil mechanics and their application in structural design and analysis.

LEARNING OUTCOME

- The student will have the knowledge about reinforced cement concrete and its applications in buildings and will be aware of the methods of designing various structural members using reinforced cement concrete.

Module-1

Design Methods

Introduction to Working stress method. Introduction to Limit state method.

Module-2

Singly & Doubly Reinforced Beams and Flanged Beams

Introduction, Bending of beam assumption, Moment of resistance, Modes of failure, Maximum depth of neutral axis, Limiting Values of tension steel & moment of resistance. Requirement of good detailing of reinforcement.

Module-3

Shear and Development Length

Introduction, Shear stress, Diagonal tension Shear reinforcement, Development length, Anchorage bond, Flexural bond.

Module-4

Slabs

Introduction, Design of One way and Two way slab using limit state method.

Module-5

Elements of Soil Mechanics

Elementary Soil Mechanics Classification of Soil, Properties of Soil, Safe bearing capacity, Active & Passive earth pressure.

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku, "Elementary Structural Analysis".
5. Rama Armarutham S., "Strength of Materials".
6. Neelam Sharma, "Reinforced Concrete"
7. IS 456:2000
8. N. Krishna Raju, "Renforced Concrte : Limit State Method"
9. KR Arora, "Soil Mechanics And Foundation Engineering"

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COURSE CODE:AR1404	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-CLIMATOLOGY	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	1	1	0	2	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To equip the students with scientific background required to design climate responsive buildings, by offering a clear understanding of the various climatic zones and its climate responsive considerations in architectural design of building and built up areas.

LEARNING OUTCOME

- The students will be acquainted with the concept of climate as a significant determinant of built form and have a understanding of the climate controlling devices.

Module-1

Climatology:

Role of climate with respect to shelter and importance of Building climatology, Tropics, climatic zones, macro and micro-climate, Elements of climate and climatology data needed for planning of buildings, change of seasons, distribution of global pressure belts & wind movements.

Human Comfort:

Human heat balance and thermal comfort, Thermal stress index, effective temperature and bio climatic analysis and chart, Interrelationship of climatic elements and psychometric chart.

Module-2

Climate types:

Climate types all over the world.

Tropical climate: climate zones, their characteristics & responses of the traditional / vernacular.

Micro Climate & Site Climate.

Module-3

Solar Radiation:

Calculation of solar radiation on building surfaces, solar charts; azimuth, altitude, incidence Design and application of shading devices, sun machines and their uses; Opaque building elements and heat transfer through this elements, solar gain factor and sol-air temperature.

Wind:

study of diurnal and seasonal variations, heating and cooling, effect of topography: effect of wind on location of industrial areas, airports and other land-uses and road patterns, Air movement in and around buildings, wind eddies, size and position, effect of wind on design and siting of buildings. Requirement, size & position of openings, Air-flow pattern inside & outside buildings.

Module-4

Day-light:

Glare, amount of light, sky as a source of light and day-light factor, effect of size and shape of openings in different planes with and without obstructions.

Orientation and Application of Climatic Principles:

Siting of buildings with respect of sun, wind and view; Climatic design of indigenous shelters in response to different climatic zones in India; Use of landscape elements, evaporative cooling, ground cooling, cavity walls, topography; Ventilation of roof spaces and controlled ventilation.

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Module-5

Rating systems:

Example of climate-responsive building-projects from India and abroad.

Brief introduction of rating systems for climate responsive buildings such as LEED, GRIHA and others.

Broad understanding of strategies and codes related to energy efficient and climate responsive considerations in buildings and built up areas.

REFERENCE BOOKS

1. Koinberger, O. Tropical climate.
2. Krishan, Arvind. Climate Responsive Architecture.
3. "Manual of Tropical Housing and Building: Climate Design", O.H. Koenigsberger et.al., Madras: Orient Longman, 1984.
4. Lam, W. M. C. (1986). Sun-lighting as Form-giver for Architecture. New York : Van Nostrand Reinhold
5. Kukreja, C. P. (1982). Tropical Architecture. New Delhi : McGraw-Hill.

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COURSE CODE:AR1405	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- HISTORY OF ARCHITECTURE & CULTURE -III (ISLAMIC ARCH.)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	1	2	0	3	3	40	60	0	100	3

OBJECTIVES:

- Understanding of the period in terms of its location, climate as well as the socio-cultural, historical, economic and political influences of the time.
- Study of the building 'types' and the development of architectural form and character based on the developments in construction and technology exemplified through specific building examples that identify the works of the period.
- Understanding the intentions of the period and architects as a solution to the need or demands of the period.

LEARNING OUTCOME

- The study must enable students to do a comparative evaluation of developments in a chronological manner along the timeline and across different geographies.
- The students will learn the chronological evolution and impacts of geographic, climatic, geological, religious, political and socio-cultural backgrounds of medieval architecture – in relationship to materials and techniques of construction.

Module-1

Introduction:

Introduction and understanding of 'Islam's' philosophy and its interpretation in building type e.g. mosque, tomb, fort and their elements like domes, minarets, arch, squinch etc.

Module-2

The Sultanate Style:

With reference to the Slave, Khalji, Tughlaq, Sayyid, Lodhis and Shershah Suri regimes (who ruled from Delhi) and their architecture.

Module-3

Provincial Architecture:

Development of colloquial styles in various provinces of India like Punjab, Jaunpur, Gujrat, Bengal, Bijapur, Bidar and Deccan.

Cities and Citadels: Morphology of fortified cities of Jaisalmer, fort/ palaces like Mandu, Chittorgarh, Orchha, Datia, Jodhpur etc. with an overview on architectural types like havelis, stepwells, gates, baradaris etc.

Module-4

Mughal Architecture:

The architecture of the Timurids in India- Babur, Hamayun, Akhbar, Jahangir and Shahjahan.

The proportions, structure systems, landscape, materials, scale and distinct features. The Oudh architecture, which was a blend of the Mughal style and the British features, in Lucknow and its environs. The manzils, baghs, kothis, imambaras, karbalas: their planning, materials and techniques.

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Colonial Architecture:

REFERENCE BOOKS

1. Islamic Architecture in India, Satish Grover, Galgotia Publishing Company, 1996.
2. Percy Brown, "Indian Architecture (Islamic Period)", D. B. Taraporevala Sons and Co. Private Ltd., Bombay, India, 1995.

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COURSE CODE:AR1406	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- BUILDING SERVICES - II (ELECTRICAL & LIGHTING)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	2	1	0	3	3	40	60	0	100	3

SUBJECT OBJECTIVE

- To understand the basic principles of physics of electricity and light.
- To make them enable to draw the electrical layout with appropriate cross section of wires and illuminance calculations for residences.
- To know the characteristics and applications of the different types of modern lamps and luminaires.
- To familiarize the student with electrical bye laws as per NEC/BIS.

LEARNING OUTCOME

- To develop the understanding of important Services in buildings, definitions and terms used, functioning and their applications in building
- A fair understanding of space requirements and distribution of electrical service provisions.
- The understanding of lighting principles and different electric light sources available.

Module-1

Fundamental Electrical Concept :

Fundamental principles of Electricity, voltage, amperage, wattage.

Space and facility requirement for provision of electrical supply from State electricity mains for small scale projects. Study of Consumer control assembly, electrical load based on thumb rules, wiring systems, various electrical fittings and appliances. Load calculation and wiring diagrams.

(System of supply & distribution; Methods of wiring - joint box and Loop-in; Systems of wiring – Batten, Capping and Casing, conduits Open and concealed. Circuits – Series and parallel, Simple circuits.)

Wiring Material and Lighting Accessories:

Wires and cables – materials, types, sizes, specifications, Main switch, M.C.B, Distribution Board, Meter, Fuse and types of fuses; Guidelines for installation of light fittings.

Lighting accessories-switches, Ceiling rose, socket outlets, plugs, lamp holders.

Architectural concepts and provision of Power transmission and supply for medium scale buildings , LT&HT lines, Indian Electricity Act.

Study of sub stations, transformers, feeders, circuit breakers, bus bars, types of conductors, method of earthing, lightening arresters, electrical load, standby generators, Automatic relays etc.

Module-2

Distribution system:

Study of sub stations, transformers, feeders, circuit breakers, bus bars, types of conductors, method of Earthing, lightening arresters, electrical load, standby generators, Automatic relays etc.

Conceptual understanding of Electric supply and distribution for residences, group housing projects, High rise buildings, Institutional campus and other building typologies in medium scale.

Principles of light and Illumination –

Definitions and design concerns- Electromagnetic radiation, waves, nature of vision, Units of light, flux, solid angle, luminous intensity –utilization factor – depreciation factor, brightness, glare, Visual tasks, Factors affecting visual tasks.

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Module-3

Electric light sources:

Brief description, characteristics and application of different types of lamps, methods of mounting and lighting control. Classification of luminaries. Market survey for different types of Luminaires-manufacturers' data on luminaries.

Module-4

Lighting design:

Lumen method and point by point method for lighting design. Study of spectral energy distribution, Luminous efficiency- color temperature – color rendering, Additive, subtractive color, lighting tasks and their application areas.

Lighting concepts and tasks for different building typologies / spaces in small and medium scale.

Module-5

Electrical layout:

Electrical layout for a residence and electrical layout for one of the medium sized building/layout based on thumb rule calculations and indexing at conceptual level. Lighting design concept and layout of a small space based on the identification of the lighting tasks.

REFERENCE BOOKS

1. National Building Code of India.
2. National Electrical Code.
3. Raina K.B. & Bhattacharya S.K., Electrical Design estimating and costing, New Age International (P) Limited, New Delhi, 2004.
4. Rudiger Ganslandt & Harald Hofmann, Handbook of Lighting -Design, Druckhaus Maack, Lüdenscheid, 1992.
5. Kevin Kelly & Kevin O'Connell, Interior Lighting Design - A Student's Guide.

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COURSE CODE:AR1451(1)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ART/ PERFORMING ARTS PROJECT-IV

SUBJECT OBJECTIVE

- To embed stronger and more enduring means of evoking architecture and culture.

LEARNING OUTCOME

- Students will perform different cultural activities in coordination with the stream of architecture being taught in their respective semesters.

MODULE

Exercises on topic of Architectural interest like debate, skits ,extempore, theatrical exercises individually or in groups to develop their communication skills, using theater as a medium. It will also train the students towards team building.

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COURSE CODE:AR1451(2)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL COMPETITIONS-IV

SUBJECT OBJECTIVE

- To provide a wide range of design solution for creating interest in role of architecture in national and international design competitions.

LEARNING OUTCOME

- Understanding of Contemporary Architecture.
- Development of idea of Team Work.
- The student will learn to formulate architectural concept and learn to work in time frame scenario.

MODULE-1

Students will participate in different national and international competitions (preferably on projects upto the scale as mentioned in the syllabus of the Architectural Design of that year)- introduced by Architects, Architectural, colleges, firms and forums NGO's, Council of Architecture, NASA, Zonal NASA, etc.

The students will formulate the scheme under the guidance of faculty mentors and prepare basic design layout and competition requirements.

The students will have hands on practice of the rendering techniques.

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COURSE CODE:AR1451-04	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ERGONOMICS

SUBJECT OBJECTIVE

- To expose the students to the requirements of designing for the human comfort in accordance with anthropometry.

LEARNING OUTCOME

- The students will have knowledge of ergonomics and its applications in design including designing for the physically challenged and the elderly.

MODULE

Human being in the manmade world and importance of ergonomics, Gross human anatomy, Ergonomics for children at workplace old people.

Introduction to Anthropometrics, static and dynamic anthropometrics, importance of furniture to human and designed form, muscles and work physiology.

Built environment for the physically handicapped, Ramp, toilets and corridor design, Spatial requirements for wheel chair movement.

Design issues in the design of old age homes, Criteria to be considered when designing for the visually impaired.

Controls and Displays, psycho psychological aspects of Design, Occupational hazards in work environment, Visual stress, Postural Stress, Stress due to commuting.

REFERENCE BOOKS

- Chaira, J. D. and Callender, J. H. (1987). Time Savers Standards for Building Types. Singapore : McGraw-Hill.
- Crosbie, M. J. and Watson, D. (2005). Time Savers Standards for Architectural Design: Technical data for Professional Practice. 8th Ed. The McGraw-Hill Company.

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COURSE CODE:AR1451-05	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-IV	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

TRADITIONAL ART & CRAFT-I

SUBJECT OBJECTIVE

- To Appreciate and understand art, craft and architecture as manifestation of a broader cultural and intellectual milieu to which it belongs and evolves from.

LEARNING OUTCOME

- The students will be able to develop an understanding of the various art forms and craft movements.
- Fine tune the aesthetic sense and critically appreciate art.

MODULE

Introduction to traditional art, craft and culture of different states of India.

Traditional painting-Madhubani painting, Thanjavur painting, Pattachitra painting, miniature painting, tribal arts etc.

Traditional sculpture and crafts-terracotta, metal casting, woodwork, tapestry, Furniture and other fabric based craft.

REFERENCE BOOKS

- Handmade In India by Aditi Ranjan and M.P. ranjan.
- Art and Craft of India byllayCooper and jaan Gillow.

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COURSE CODE: AR1453	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- COMPUTER STUDIO-I (AUTOCAD 2D & 3D)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY- PAEC/SEC	1	0	2	3	2	50	0	50	100	-

SUBJECT OBJECTIVE

- To Impart skills of Computer Aided Design & Simulation in decision making in Architectural design
- To impart skills of presentation technique using computer as a tool

LEARNING OUTCOME

- The students will Understand CAD as a basic tool for Architectural Design.

Module 1

AutoCAD 2D:

Introduction to AutoCAD as 2D drafting tool.

CAD 2D Vector UCS generation, creation of different entities, dimensioning, Blocks, Array, Layers, line types, Colours.

Digital drawings tools, drawing lines and shapes, modifying lines and shapes, drawing with accuracy and speed.

Module 2

Drawings:

Organizing plans, sections and elevations, drawing and printing to scale, text styles and sizes, hatches and dashed lines.

Stencils and blocks, advanced editing tools, and dimensioning drawings.

Module 3

AutoCAD 3D:

3D modelling using AutoCAD

Introduction to 3D-modelling technique using AutoCAD.

3D basics: Axes, Planes and Faces.

3D Object Modification: Rotate, Mirror, Array and Scale.

3D Boolean operations: Union, Subtract, Intersect.

3D primitive objects: Box, Wedge, Cone, Sphere, Cylinder, Torus and Pyramids. Solid modeling: Revolve, Shell, Taper, Loft, Path extrusion and sweep.

REFERENCE BOOKS

1. "Mastering AutoCAD 2010 and AutoCAD LT 2010", George Omura, Wiley, 2009.
2. Mastering AutoCAD 2017 and AutoCAD LT 2017, George Omura & Brian C. Benton
3. 100 CAD Exercises - Learn by Practicing!: Learn to design 2D and 3D Models by Practicing with these Artes Jason.

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COURSE CODE: AR1454	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- NTCC – III (EDUCATIONAL TOUR /DOCUMENTATION + WORKSHOP)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PAEC/PAECC	0	0	0	0	1	50	0	50	100	—

OBJECTIVES

- To prepare students to integrate theory and practice from courses through educational tours/documentation & workshops.

LEARNING OUTCOME

- The student will able to develop and improve their planning concepts and ideas through critical thinking
- Understand inception, scheduling, execution and dissemination in the context of live architectural planning through educational tours/documentation & workshops.

Module

- An exposure to be given to students of the cultural heritage buildings, buildings of importance to the nation and society, urban and rural areas and their precincts.
- The students are introduced to the planning aspects of buildings of importance, their functional and aesthetic characteristics via discussions of the tour guide/ coordinator of workshop.
- Preparation of Educational tour reports / Workshop reports by the group /groups of students.

Guidelines for Educational tour Report/ Workshop Report

The report has to be not less than 50 pages. The report has to be spiral bound. The drawing and sketches should be properly scaled and labeled with necessary legends and detailing.

Language	English
Paper Size	A4
Margin	The left and right margin of 1.25 inches. The top and bottom margin of 1.00 inch
Typing	On both sides of the page. The text will follow line spacing of 1.5 lines and double justified.
Arrangement of Contents	Every NTCC Project Report should have three parts: the pre pages, the main text and the reference material. The following is the order: 1. Preliminary Pages: a. Title page b. Declaration c. Necessary Approvals Page d. Acknowledgement e. Table of Contents 2. Text: Chapters: (Building /area wise) & sub-sections 3. Area Context, Data Collection, Analysis, Conclusions, Recommendations & Proposals 4. Reference Materials: Appendix
Tables & Figures	These shall be placed immediately after the paragraph that contains it. Each table & figure has to be numbered consecutively within chapters.
References (if	These have to be listed alphabetically.

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any)	Retrievable data must be listed in references. Personal interviews/ raw data shall not appear in the reference list.
Appendices (if any)	Contains supplementary of illustrative material on explanatory data to be incorporated in main document as per the order of appearance in the document.

The Break up (components and their weightage) of continuous internal assessment are given as under :

S.No.	Title	CIA (MM 50)
1.	Introduction & aim of Educational Tour/Workshop	5
2	Necessary Approvals	5
3.	Case Studies/ Historical Background of the place or building	10
4	Photographs of details, sketches, Plans (key plans /measured drawings/schematic plans, etc.)	20
5.	Learning outcomes/conclusions drawn	10

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COURSE CODE:AR1501	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL DESIGN-V	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	2	3	0	5	6	40	60	0	100	12

SUBJECT OBJECTIVE

- To understand the role of climate and environment as a context in shaping building design.
- To comprehend the interpretation of prescribed environmental directions / norms for a given place in building forms.
- Learn building on sloping sites or with unique topography.

LEARNING OUTCOME

- The student will be able to recognizing the relevant building techniques & materials suitable for different regions & explore their applicability in design.

Module-1

Understanding climatic zones:

Lecture on the varied climate zones especially in the Indian sub-continent including examples of environment responsive designs. Establishing design criteria for various climate types.

Module-2

Design of climate responsive buildings:

Designing a multi-functional building in a typical climate zone utilizing the developed design criteria.

Design on sloping site:

Design exercise on sloping terrain with specific orientation & climatic conditions.

Module-3

Design Exercises:

Introduction of long span structural systems that inspire form oriented built forms like cultural complex, museums.

SUGGESTED STUDIO EXERCISES

1. **Time problems** like HIG residence (1DAY)
(Studies of various climates, establishing climatic responsive architecture, design on sloping site responses)
2. **Minor/Short Problems** design of multi-functional building like studio cum residences, club, college hostel, commercial complex etc (1 WEEK)
3. **Major Problems** design on sloping site with unique topography for structures complex or cultural complex, museums etc.
4. Study tours to relevant destinations for documentation of vernacular architecture.

REFERENCE BOOKS

1. Krishan, Arvind Climate Responsive Architecture.
2. Brown, G.Z. Sun Wind & Light.
3. Olgyay, V. Design with Climate.
4. Yeang, Ken. Designing with Nature: The Ecological basis for Architecture Design.
5. Works of Architects like Hasan Fathy, B.V. Doshi, Charles Correa, Ken Yeang, among others to understand responses of varied designers to the existing environment.

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COURSE CODE:AR1502	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME - BUILDING CONSTRUCTION & MATERIAL - V	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY - BS&AE	1	0	0	1	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To acquaint the students to usage of building materials such as Metals (Ferrous), Floorings.
- To understand the use of these building materials in building works.
- To understand the use of the metal doors/windows in existing and new construction.
- To familiarize the student with the building construction practices on site.

LEARNING OUTCOME

- Students will be able to explore on various building materials and construction techniques based on the performing standards and codes, wherein application of each material would be discussed in detail, both in the context of historical and contemporary methodology.
- Students will be able to know usage of new technology/materials.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1

Metals (Ferrous):

Ferrous-Iron (Pig, Cast & Wrought).

Variety of Mild Steel sections – Sheets (plain & corrugated), Flats, Bars (round & square), Angles (Equal and Unequal), R.S. Sections (I beams, Channels, Tees).

Hollow Tubular sections available for application in building industry.

Stainless steel and Alloys.

Metals (Non-Ferrous):

Non Ferrous – Copper & Copper based alloys (Brass & Bronze), Tin, Cadmium, Chromium, Zinc, Lead and Nickel. Metal Coatings – Electroplating, Anodizing.

Module-2

Floor & Floor Finishes:

Brick, Cement Concrete, Stone, Terrazzo, Chequered Tile, Ceramic Tile, Vitrified Tiles, Wooden.

Reinforced Brick Work:

Types, Mixing, Curing, Water Cement Ratio, Qualities and Workability.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit assembly workshops/shops etc. for better understanding and submit report.

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WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-3

Workshop/Construction Yard Practice:

Practicing in construction yard / workshop by making the examples of metal joinery, fixing of flooring, fixing of dado, door samples.

Site Exposure- Exposure to advanced building construction practices on site of various items of work from foundation to roof and finishes.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-4

Structural Steel Works:

Typical metal joinery - Mechanical (riveted & bolted), Soldering and Brazing and welding.

Detailing of structural steel work – Beam to Column joint, Beam to Beam joint, Column Splice, Column Base, Roof Truss to Column Joint.
Steel Stairs.

Doors & Windows(Metals):

Mild steel L and Z section, Pressed steel section.

Shutters (Operational Mechanisms):

Complete understanding of operational mechanism (automatic and manual) of variety of Rolling shutters and Collapsible shutters.

Module-5

Reinforced Brickwork:

Reinforced brick piers, lintels, slabs and projections.

Floor/Dado/Skirting:

Complete process of laying of floor and skirting - Brick, Cement Concrete, Mosaic and Terrazzo floors.

Laying and fixing of Stone slabs, Chequered Tile, Ceramic tiles, Vitrified tiles and Wooden (parquet and plank) on subfloors and walls.

LIST OF ASSIGNMENTS

1. To study the various tools, equipments used in structural steel works.
2. To construct examples of structural steel works in construction yard.
3. To survey construction work on site and submit report. To construct examples of reinforced brickwork and Variety of flooring in construction yard.

CONSTRUCTION PLATES

1. To understand the application of structural steel works in buildings.
2. To understand the application of metal doors and windows in buildings.
3. To understand the application of metal shutters (Rolling) in buildings.
4. To understand the application of metal shutters (Collapsible) in buildings.
5. To understand Reinforced brick piers, lintels, slabs and projections.
6. To understand laying of above mentioned floors and fixing of above tiles on floors and walls.

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REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
3. The Construction of Buildings – Barry Volume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction_Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
7. Building Construction-Bindra &Arora.
8. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
9. Mitchell's Structure & Fabric-II
10. Principle & Practices of Heavy Construction; Smith & Andres
11. Don A.Watson, Construction Materials and Processes, McGraw Hill Co.
12. Building Materials by SC Rangwala; Charotar Pub. House, Anand
13. M. Gambhir, NehaJamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill Publishers, New Delhi, 2011.
14. R.K.Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
15. National Building Code of India (Latest Edition), Bureau of Indian Standards.
16. Engineering Materials-Deshpande.
17. Engineering Material-Roy Chowdary
18. Designing with models – Criss. B. Mills.
19. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
20. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
21. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.

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COURSE CODE:AR1504	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-INTERIOR DESIGN	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs.
COURSE CATEGORY-EC/PE	1	0	2	3	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To initiate students into theory and practice of Interior Design.
- To familiarize students with modern materials and techniques useful for furniture and interior design.
- To appreciate early interventions in design of furniture

LEARNING OUTCOME

- Understanding Interior as basic for design with respect to Function, comfort and aesthetics.

Module-1

Introduction to Interior Design :

Definitions related to interior design, review of enclosing elements like walls, floors, ceilings, openings, staircases, furniture & design elements such as color, light textures in interior spaces. Principles of interior design.

Module-2

History of Interior Design:

Introduction to history of Interior & Furniture Design
Study of furniture of great contemporary masters.

Module-3

Materials and Finishes:

Study of Materials, Finishes & their applications in Furniture & other Interior Elements
An in-depth understanding of the characteristics and workability of various materials used in interiors. Modern Interiors with respect to Materials Ceiling, Panelling, Furniture etc.

Module-4

Modular Furniture and Interior elements:

Understanding innovation in Furniture & Interior Design
Modern materials, Modular furniture, Fittings & fixtures.

Details of Interior landscaping

Module-5

Space Designing:

Analysis & Design of spaces with furniture.
Analyzing existing designs of selected furniture on basis of ergonomics, user type, economics, material, joinery and maintenance to ascertain their suitability. Design furniture for specific use complying to the aforementioned formulated design criteria. Build scaled models of the designed furniture for better understanding of working and materials.

REFERENCE BOOKS

1. Corky Binggeli, "Interior Design Illustrated", 3rd Edition Francis D.K. Ching,
2. Joseph De Chiara, Julius Panero, Martin Zelnik, "Time-Saver standards for Interior design and Space planning",
3. John F. Pile, "A history of interior Design"
4. Bridger May, Curt Sherman, "Architecture and Interior Design through the 18th Century : An

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 - A. Sharma (bottom center)
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- Integrated History Buie Harwood",
5. Susie Mckellar Penny Sparke, "Interior Design and Identity"
 6. Corky Binggeli, "Building Systems for Interior Designers"
 7. Pandya, Yatin. Elements of spacemaking.
 8. Massey, Anne. Interior design since 1900.

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COURSE CODE:AR1505	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE NAME- HISTORY OF ARCHITECTURE & CULTURE -IV (WESTERN ARCH.)										
COURSE CATEGORY-PC	1	2	0	3	3	40	60	0	100	3

OBJECTIVES:

- To provide an insight into the architecture of Classical antiquity & early Medieval period. Social, religious, political and architectural character, construction methods, building materials and settlement planning shall be explained with suitable examples.
- To provide an understanding of the evolution of Classical architecture in the west, Indian Architecture in its various stylistic modes characterized by technology, ornamentation and planning practices.

LEARNING OUTCOME

- The study must enable students to do a comparative evaluation of developments in a chronological manner along the timeline and across different geographies.
- The students must be enabled to appreciate tangible and intangible aspects of heritage associated with history.

Module-1

Greek and Roman Architecture:

Classical orders as constituent element of Architecture. Column Orders and the articulation of temples. Classification of temples. Study of important acropolis, agora, temples, theatres, tombs and house forms.

Study of important forums, temples, basilicas, thermaes, theatres, amphitheatres, circuses, tombs, triumphal arches, palaces, houses and villas.

Module-2

Early Christian Architecture:

Development of early church from Roman basilica. The concept of center and path of Christianity manifested through centralized and longitudinal church. Study of different basilica churches in Italy. Rise of Byzantine Era- Centralization in Byzantine churches. Centrality and interiority of both crossdomed and cross in square planned church. Indistinct exterior of churches and the domed 'heavenly' interior. Construction of dome over polygonal compartments through the use of pendentives. Study of important churches in Italy.

Module-3

Romanesque Architecture:

Massiveness and verticality of medieval churches. Combination of the five towered structures and longitudinal basilica. Gradual integration of tower from early to later examples.

Gradual flow of Romanesque era into Gothic Architecture. Integration of wall and vault.

Ribbed vault and the dissolution external wall to allow light. Study of important cathedrals and churches from Italy and France.

Module-4

Renaissance Architecture:

Break with medieval churches for sources from Roman antiquity. Spatial centralization through simple addition of independent spatial elements. Use of elementary geometrical forms unified through symmetry and simple mathematical ratios. Reintroduction of anthropomorphic Classical Orders. Study of palazzos and development of centralized church form through specific examples from Italy.

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Mannerism Conflict and tension in Mannerism in place of harmony and order of Renaissance. Dynamic interplay of contrasting elements as against static addition of independent units of Renaissance church. Interplay between manmade and nature in villas. Dynamism of urban spaces. Centralized longitudinal and the elongated central church plans. Study of important villas, churches and urban spaces in Italy.

Module-5

Baroque Architecture:

Dynamism and systemization of Baroque architecture. Vitality and spatial richness with underlying systematic organization. Space as constituent element of architecture, as a complex totality and indivisible figure, comprising of interacting spatial elements based on inner and outer forces. Sensitivity to effects of texture, color, light and water. Study of important urban spaces and churches in Italy and Germany.

REFERENCE BOOKS

1. Sir Banister Fletcher, A History of Architecture, University of London, The AntholonePress, 1996.
2. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford UniversityPress, London, 1985.
3. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994
4. Pier Luigi Nervi, General Editor - History of World Architecture - Series, Harry N.Abrams, Inc.Pub., New York, 1972.
5. S.Lloyd and H.W.Muller, History of World Architecture - Series, Faber and Faber Ltd., London, 1986.
6. Gosta,E.Samdstrp, Man the Builder, Mc.Graw Hill Book Company, New York, 1970.
7. Webb and Schaeffer; Western Civilisation Volume I; VNR: NY: 1962
8. Vincent Scully: Architecture; Architecture – The Natural and the Man Made: Harper Collins Pub: 1991.
9. Christian Norberg-Schulz, Meaning in Western Architecture, Praegur, 1975
10. Kenneth Frampton, Modern Architecture: A Critical History, Thames and Hudson, Ltd. 2007.
11. Copplestone, T. and Lloyd, S.(1971).
12. World Architecture: An Illustrated History. London : Verona Printed.
13. Watkin, D. (2005). A History of Western Architecture. 4th Ed. London :Laurence King Publishing.

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COURSE CODE:AR1506	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- BUILDING SERVICES - III (MECH. HVAC & F.F.)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	2	1	0	3	3	40	60	0	100	3

SUBJECT OBJECTIVE

- To develop the understanding of important Services in buildings, definitions and terms used, functioning and their applications in building.

LEARNING OUTCOME

- The students will get familiar with the fundamentals of air conditioning, firefighting and vertical Transport systems & their integration with architectural design.

Module-1

Introduction:

Introduction to Electro-mechanical means of vertical transportation in buildings, requirements, occupancy, load etc.

Study of elevators and escalators on the basis of quality and quantity of service, various components, standard space requirements, various types, construction details and architectural implications.

Module-2

Types of Lifts & Escalators:

Working of lifts with details of lift section describing various parts of lifts -Definitions regarding lifts such as average travel lift carrying capacity, rated load, rated speed, RTT etc.

Installation requirements and the information to be provided by the architect for the installation - Grouping of lifts and design standards of a lift lobby.

Function and working of Escalators:

The emphasis shall be on the drawing of the correct plan and section of the lift and the lift well showing various parts and how to group them in a building core for the various functions they perform.

Module-3

Air-conditioning:

Detailed studies of Natural and Artificial ventilation. Refrigeration cycle, systems of air conditioning: Unit, split, package, Direct expansion, Chilled water System, Ducting & air conditioning layout, fittings and fixtures, chilling plants, cooling towers, air handling units, Calculation of AC loads. Air distribution systems, ducts and ducting layouts, – VAV & VRV Systems.

Design criteria for selecting the Air conditioning system for small and medium sized buildings and layouts with emphasis on space requirement, orientation of the building and energy conservation measures

Module-4

Fire Fighting & Standards:

Fire, causes of fire and spread of fire, fire fighting, protection & fire resistance, equipment & methods of fighting fire, Code of fire safety, fire regulations.

Structural elements and fire resistance, planning and design of Fire escape routes and elements, wet risers, dry risers, sprinklers, smoke detectors, fire dampers, fire doors, water curtains etc.

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Introduction to firefighting systems.

Fire detection, Fire sprinklers, Fire extinguishers and Fire Hydrants system.

Their system of working and design calculations.

REFERENCE BOOKS

1. Mitchell's Building Construction: Environment & Services, Peter Burberry, 8th Edition, 1997, Longman.
2. Mechanical and Electrical Equipment for Buildings, B. Stein and J. Reynolds, 10th Edition, 2005, Wiley & Sons Inc.
3. The Building Systems Integration Handbook, R Rush, 1991, American Institute of Architects.
4. Building Services: A Guide to Integrated Design: Engineering for Architect, RP Parlour, 2008, Integral Publishing.
5. Understanding Buildings: A Multi-disciplinary Approach, E Reid, MIT.
6. William H. Severns and Julian R. Fellows, "Air-conditioning and Refrigeration", John Wiley and Sons, London, 1988.
7. A.F.C. Sherratt, "Air-conditioning and Energy Conservation", The Architectural Press, London, 1980.
- ASHRAE Publications.
8. National Building Code of India (Latest Edition), Bureau of Indian Standards.
9. Willim, J. McG. (1971). Mechanical & Electrical Equipment for Buildings.
10. Sawhney, G. S. (2006). Fundamentals of Mechanical Engineering: Thermodynamics, Mechanics and Strength of Materials. New Delhi : Prentice Hall of India.
11. F. Hall , "Building Services and Equipment, Volume 1,2 & 3", Routledge; 3rd edition 1994 2.
12. "National Building Code for India", Bureau of Indian Standards, Latest Edition
13. John E. Flynn and Jack A. Kremers, "Architectural Interior Systems" , Van Nostrand Reinhold; 3 Sub edition, 1992
14. P. N. Ananthanarayan, "Basic Refrigeration and Air Conditioning" , Tata McGraw-Hill Education , 2013
15. Strakosch, George R. "Vertical transportation: elevators and escalators", John Wiley & Sons Inc, 1983.
16. Lechner, Norbert, "Heating, cooling, lighting: Sustainable design methods for architects", John wiley & sons, 2014.

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COURSE CODE:AR1551(1)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-V	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ART/ PERFORMING ARTS PROJECT-V

SUBJECT OBJECTIVE

- To embed stronger and more enduring means of evoking architecture and culture.

LEARNING OUTCOME

- Students will perform different cultural activities in coordination with the stream of architecture being taught in their respective semesters.

MODULE

Exercises on topic of Architectural interest like debate, skits, extempore, theatrical exercises individually or in groups to develop their communication skills, using theater as a medium. It will also train the students towards team building.

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COURSE CODE:AR1551(2)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-V	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL COMPETITIONS-V

SUBJECT OBJECTIVE

- To provide a wide range of design solution for creating interest in role of architecture in national and international design competitions.

LEARNING OUTCOME

- Understanding of Contemporary Architecture.
- Development of idea of Team Work.
- The student will learn to formulate architectural concept and learn to work in time frame scenario.

MODULE

Students will participate in different national and international competitions (preferably on projects upto the scale as mentioned in the syllabus of the Architectural Design of that year)- introduced by Architects, Architectural colleges, firms and forums NGO's. Council of Architecture, NASA, Zonal NASA, etc.

The students will formulate the scheme under the guidance of faculty mentors and prepare basic design layout and competition requirements.

The students will have hands on practice of the rendering techniques.

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COURSE CODE:AR1551(3)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-V	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

FOREIGN LANGUAGE-V (FRENCH)

SUBJECT OBJECTIVE

- To enable students to acquire more vocabulary, to use all negative expressions, adjectives, new tenses, to understand more advanced texts and start describing any situation using Past Tense, Imparfait, present progressive, and future tenses and also to enable them to identify and talk about famous monuments of France

LEARNING OUTCOME

- After completing these modules, the students will be able to communicate using negative expressions in French, describe past and future incidents or any situation in any given tense using correct form of adjectives. The student is able to talk about famous monuments of France and communicate with a receptionist for booking a room in a hotel.

MODULE

- Childhood memories: a text using imparfait.
- Conjugation and usage of passé composé with verb 'avoir'
- Conjugation and usage of passé composé with verb 'être'.
- A memorable celebration - difference between passé composé and imparfait
- Expressing one self using future tense.
- Future plans: conjugation and usage of simple future tense (exceptional verbs).
- Describing continuous actions in present
- A foreigner in France - using different negative expressions.
- Hotel reservations.
- Usage and placement of COD and COI in different cases
- Description of famous monuments of France
- All forms of describing words.
- Using more than one adjective with a noun.

REFERENCES BOOKS

- A Propos- A1(by Christine Andant, Catherine Metton, Annabelle Nachon, Fabienne Nugue)
- Mon livre de français (levels are mentioned in the attached document)
- Apprenons la grammaire ensemble
- 450 exercices de grammaire
- Collins 3-in-1 French Grammar, Vocabulary & Verbs
- A compilation of French texts and exercises made by faculty members.

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COURSE CODE:AR1551-04	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE NAME-ELECTIVE-V	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY-ECPE										

GRAPHIC DESIGN II

SUBJECT OBJECTIVE

- To understand various aspects of design in graphics. Understand presentation skills, logos and ad making with Computer graphics.

LEARNING OUTCOME

- Develop use of graphics as tool of presentation and 3D visualization in architectural works

MODULE

Study fundamentals of graphic design, history, career options, works of prominent designers & the graphic design process.

Study of tools of graphic expression. Study of styles of expression, developing manual presentation skills.

Computer graphics. Study overview of current packages, their potentials & applications such as, adobe series, Corel draw, flash etc.

Exercises on design of books, posters, promotional materials, stationery, trade marks & corporate logos. Evolve comprehensive corporate identity program Developing environmental graphics / signage Brand promotion, packaging design & ad making for both the print & electronic media.

REFERENCE BOOKS

- The Elements of Graphics Design by Alex W WIGHT
- Rendering with pen n Ink
- Dictionary of Graphic design and designers, Thames and Hudson

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COURSE CODE-AR1551-05	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE NAME-ELECTIVE-V	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY-ECPE										

TRADITIONAL ART & CRAFT-II

SUBJECT OBJECTIVE

- To introduce the various art forms and architecture that exist from ancient to modern times and to sensitize the students towards the moral, aesthetical, cultural, political contexts and potential of art & architecture.

LEARNING OUTCOME

- The student will develop understanding of cultural expression in art and craft as resultant of socioeconomic and political roots of society.
- The student will understand various art and craft movements resulting into manifestations of architectural forms.

MODULE

Introduction of Traditional art and Craft of European and other countries.

Study of pottery, ceramic, wood work, metal casting, mural, traditional painting and study of traditional sculpture at global level.

Mainly the traditional arts and crafts of European countries, Egypt, Arabian country, China, Korea, Japan, Tibet and Thailand.

Modern art movements.

REFERENCE BOOKS

- Arts and crafts by Asim k. Dasgupta,
- Dictionary of art by Jean turner,
- Arnold Dana , art history- very short introduction by Oxford press.

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COURSE CODE:AR1551-06	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-V	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

BIO-MIMICRY ARCHITECTURE

SUBJECT OBJECTIVE:

- To understand 'Biomimicry' and 'Biophilia'
- Reconnect with nature: learning to observe nature by function
- To understand and explore how biology can be integrated with design
- To examine how the 'biomimicry approach' can influence sustainable designs and innovations

LEARNING OUTCOME

- Students Will be able to drive abstractions from nature's solutions into design generation concepts
- Will be able to develop advanced skills on the use of creative design methods by examining the nature

MODULE

Understanding Biomimicry : theory and case studies

Approaches, Principles and levels of Biomimicry

Patterns of Biophilia

Integrating Biology in Design: the design process along with design exercise to realize the process of discovering biological inspiration and its application and its relevance to sustainability

REFERENCE BOOKS

1. Michael Pawlyn, "Biomimicry in Architecture", 2011, RIBA Publishing, London.
2. Dora Lee, "Biomimicry: Inventions Inspired by Nature", 2011, Kids Can Press, Toronto, Canada.
3. Stephen R. Kellert, "Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life, 2011, John Wiley & Sons, New Jersey.
4. Stephen R. Kellert, "Nature by Design: The Practice of Biophilic Design", 2018, Yale Univ.Press.
5. Benjamin R. Krueger, "Biomimicry: Nature as Designer", 2016, CreateSpace Independent Publishing Platform

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Rendering and animating drawings.

REFERENCE BOOKS

1. Sketchup for Architects(English,Paperback,Mirinda Earl Rustia)
2. Autodesk Revit 2017 Architecture Fundamentals
3. Autodesk Revit 2018 Architecture Basics

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COURSE CODE:AR1554	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- NTCC – IV (SUMMER ASSIGNMENT)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PAEC/PAECC	0	0	0	0	1	50	0	50	100	—

OBJECTIVES

- To prepare students to integrate theory and practice from courses to field works in the form of a architectural planning project.

LEARNING OUTCOME

- The student will able to develop and improve their planning concepts and ideas through critical thinking
- Understand inception, scheduling, execution and dissemination in the context of live architectural planning through field works.

Module

- The Students are addressed in a common briefing session about the Summer Project which introduces them to the problem, issues, requirements, timeline and deliverables for the projects going to be introduced in the upcoming semester
- The students are introduced to the project on a holistic level and briefed about the study area and its characteristics. Then they are briefed about rules of social and ethical behavior to be followed while collecting data from primary as well as secondary sources. Each student is allotted a particular aspect of planning to focus on during the course of the project.
- The student is responsible for his/her individual aspect and has to submit a report on the same at the end of the project. Based on the student's interest and relevance of the same in varied planning applications, the student works on the aspect in a professional manner as per the practical applications of the same. The integration of the various aspects allotted to students culminate towards the entire project report and dissemination of the project.

Guidelines for Project Report

The report has to be not less than 15 pages or greater than 45 pages. The report has to be spiral bound. The maps should be properly scaled and labeled with necessary legends and detailing.

Language	English
Paper Size	A4
Margin	The left and right margin of 1.25 inches. The top and bottom margin of 1.00 inch
Typing	On both sides of the page. The text will follow line spacing of 1.5 lines and double justified.
Arrangement of Contents	Every NTCC Project Report should have three parts: the pre pages, the main text and the reference material. The following is the order: - Preliminary Pages: - Title page - Declaration - Faculty Guide Approval Page - Acknowledgement - Table of Contents - Text: Chapters & sub-sections - Area Context, Data Collection, Analysis, Conclusions, Recommendations & Proposals - Reference Materials: Appendix

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Tables & Figures	These shall be placed immediately after the paragraph that contains it. Each table & figure has to be numbered consecutively within chapters.
References	These have to be listed alphabetically. Retrievable data must be listed in references. Personal interviews/ raw data shall not appear in the reference list.
Appendices	Contains supplementary of illustrative material on explanatory data to be incorporated in main document as per the order of appearance in the document.

The Break up (components and their weightage) of continuous internal assessment are given as under :

S.No.	Title	CIA (MM 50)
1.	Design Detailing	5
2	Final Report	5
3.	Presentation	5
4	Case Studies & Literature Review	5
5	Plans (key plans /measured drawings/schematic plans,etc.)	10
6	Field Visit (supported by images)	10
7	Presentation & Communication	10

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COURSE CODE:AR1601	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ARCHITECTURAL DESIGN-VI	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	2	3	0	5	6	40	60	0	100	12

SUBJECT OBJECTIVE

- To understand the constraints of multifunctional units in an urban setting with respect to social norms, climate and client's expectations.
- To understand design limitations due to authority guidelines and making drawings / details necessary for final execution of a project.
- To integrate services and structure system in the design project.

LEARNING OUTCOME

- The students will be able to design for simple and multi-use, single and multiple floors with parameters of building byelaws.

Module-1

Introduction :

Acquainting with the various ways of designing a group housing in urban context i.e. low/medium rise- high density; high rise - high density etc.

Module-2

Study and Analysis:

Through literature studies and case studies analyze the constraints, typologies and interventions in housing throughout India and the rest of the world.

Module-3

Design Proposal:

Design of a housing project incorporating varied formats of grouping on an actual site with specific bye-laws and regulations.

Module-4

Proposal:

Integration of Services and Structure Development of the housing proposal to the stage integrating services, structure and other infrastructural facilities necessary for the final execution of the project and making relevant drawing for the same.

SUGGESTED STUDIO EXERCISES

1. **Time problems** like multi level parking, common infrastructure support facility for housing like club, etc.(1DAY)
2. **Minor/Short Problems** design of row houses, semi detached, detached and duplex residences etc (1WEEK)
3. **Major Problems** design of Housing for specific socio economic group.
4. Study tours to relevant destinations for documentation of vernacular architecture.

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture: Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport - Publications, Massachussets.
3. Correa, Charles, "The New Landscape",
4. Jogelekar & Das, S.K, "Contemporary Indian Architecture: Housing and Urban Development", HUDCO, 1995

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 A. K. Das
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5. Rewal, Raj, "Humane Habitat at Low Cost", Architectural Research Cell, 2000.
6. Steele, James, "The Complete Works of Balakrishna Doshi: Rethinking Modernism for the Developing World", Super Book House, Mumbai, 1990.
7. Alexander, Christopher, "Pattern language", Oxford University Press, 1977

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Doors , Windows & Partitions (Aluminium):

Doors Frames and Shutters. Windows Frames and Shutters. Partitions Framework & fixing with other suitable materials.

Module-5

Temporary Constructions:

Centering, Shuttering and scaffolding

R.C.C. – I (Formwork & Laying)-

Foundations - Isolated, Combined, Cantilever, Eccentric footing.

Grillage and Raft foundation. Pile foundations – details of pile, varieties of piles, pile caps.

Understanding of steel reinforcement types, laying, bending and binding.

R.C.C. – II (Formwork & Laying)-

Columns, Lintel, Projections/Chujjas and Beams.

Understanding of steel reinforcement types, laying, bending and binding.

R.C.C. – III (Formwork & Laying)-

Slabs - Simply supported, Continuous & Cantilevered.

Staircases – Waist and Folded slab.

Understanding of steel reinforcement types, laying, bending and binding.

LIST OF ASSIGNMENTS

1. To study the various tools, equipments used in RCC and temporary construction works.
2. To construct examples of RCC works in construction yard.
3. To survey construction work on site and submit report.

CONSTRUCTION PLATES

1. To understand the application of Aluminium Doors and Windows.
2. To understand the application of Partitions in Aluminium framework with other suitable panel materials.
3. To understand the application of temporary construction in buildings.
4. To understand the construction of RCC Foundations along with its' steel works.
5. To understand the construction of RCC Columns, Lintels, Projections and Beams along with its' steel works.
6. To understand the construction of RCC Slabs & Staircases along with its' steel works.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
3. The Construction of Buildings – Barry Volume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction_Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
7. Building Construction-Bindra &Arora.
8. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
9. Mitchell's Structure & Fabric-II

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10. Concrete: Microstructure, Properties and Materials P. Kumar Mehta
11. Properties of Concrete A. M. Neville
12. Concrete Admixture Handbook: Properties, Science & V. S. Ramchandran Technology
13. Principle & Practices of Heavy Construction: Smith & Andres
14. Don A. Watson, Construction Materials and Processes, McGraw Hill Co.
15. Building Materials by SC Rangwala: Charotar Pub. House, Anand
16. M. Gambhir, NehaJawwal, Building Materials Products, Properties and Systems, Tata McGraw Hill Publishers, New Delhi, 2011.
17. R.K. Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
18. National Building Code of India (Latest Edition), Bureau of Indian Standards.
19. Engineering Materials-Deshpande.
20. Engineering Material-Roy Chowdary
21. Designing with models - Criss. B. Mills.
22. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
23. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
24. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
25. Testing of Concrete in Structures J H Bungey and S. G. Millard

COURSE CODE:AR1604	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-SPECIFICATIONS, COST ESTIMATION & BUDGETING	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	1	2	0	3	3	40	60	0	100	3

SUBJECT OBJECTIVE

- This course is intended to impart students with the necessary technical knowledge for preparation of Specifications and calculating estimates and detailed costing for small to medium scale projects.

LEARNING OUTCOME

- The students will get familiarize with the commonly used methods of preparing estimates of Architectural Projects.

Module-1

Introduction:

Introduction to Quantity estimation, costing and specifications related to building projects. Definition of estimating and costing, Purpose of estimation and costing, Procedure of estimating or method of estimating, data required to prepare an estimate (Drawings/ specification/ rates), complete estimate structure.

Measurement of materials and works Introduction to measurement of various construction work items, importance and significance in construction projects i.e. Units of measurement, rules for measurement, Methods of taking out quantities- Long wall and short wall method, centre line method, partly centre line, cross wall method. Standard modes of measurement as per Indian Standards for various work items.

Module-2

Types of estimates:

Preliminary/Approximate Quantity Estimates: Importance & purpose of Preliminary / Approximate estimates, Plinth area method, Cubical contents method and centre line method and their preparation. Types of approximate estimates, basic differences and advantages. Detailed Quantity Estimation: Types of detailed estimates and their application, Methods of deriving detailed quantities for various construction work items. Preparation of Detailed estimate, Work items as per construction stages: Foundations, Superstructure, Finishing works in a simple building. Description & significance of Items in Bill-of-Quantities (BOQ).

Module-3

Costing:

Costing Introduction, meaning, purpose, methods of estimating cost of construction for various work items, cost indices, rates of labour and material, analysis of rates, preparation of abstract of estimated cost, use of CPWD schedule of rates. Deriving construction cost as per BOQ. Exercises in estimation using different methods, for small or medium size buildings.

Module-4

Specifications :

Introduction, importance and scope. Principles and practices. Types of specifications, Correct form and sequence of clauses for writing specifications, impact on costing. Study and uses of standard specifications viz; drafted by C.P.W.D. Writing detailed specifications for various building materials eg. Bricks, Aggregates (fine & coarse), Cement, Reinforcement, Timber, Glass and Paints. General abbreviations used in specifications.

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Module-5

Specifications:

Writing detailed specifications for various items of work eg. Earthwork in foundation, Cement concrete, Reinforcement cement concrete work, Brick work in cement mortar, Damp proof course, Wood works (door & windows), Glazing, Plastering (cement & sand), Flooring (cement concrete & tiles), Distempering (dry & oil bound), Painting on wood & iron work, Water proof cement painting, Brick bat coba terracing.

REFERENCE BOOKS

1. Birdie, G. S. (2005). Text Book of Estimating and Costing. Dhanpat Rai Publishing: Chakraborty, M. Estimating, Costing, Specification & Valuation
2. C.P.W.D. Standard Schedule of Rates.
3. Dutta, B. N. (1998). Estimating and Costing in Civil Engineering. 24th Ed. UBS Publishers Distributors Ltd.
4. Chakraborty, M. Estimation, Costing and Specifications, Laxmi Publications
5. Kohli, D.D and Kohli, R.C. (2004) A Text Book of Estimating and Costing, S.Chand & Company Ltd.
6. Brook, Martin. (2004) Estimating and Tendering for Construction Work, 3rd edition, Elsevier.
7. Ashworth, A. (1999) Cost studies of buildings, Pearson Higher Education

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COURSE CODE:AR1605	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- WORKING DRAWING	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PC	1	0	2	3	2	40	60	0	100	3

SUBJECT OBJECTIVE

- To introduce Working drawings and their significance in the construction of buildings.
- To teach students the essential components of working drawings, notations, drawing standards, strengthen the students' knowledge about preparing working drawings for various building elements.

LEARNING OUTCOME

- To understand and making drawing/ details necessary for final execution of a project.
- To integrate all services and structure system in the working drawing project.

MODULE- 1

Introduction to working drawings: shop drawings / vendor drawings.

An exercise in fundamental elements in a "Working Drawing-Plan" an assignment on a typical standard "Working Plan".

Making complete set of working drawings for the residence or any other project designed by the student with necessary information with schedule and all specifications.

The Working Drawings to include:

- a. Developing Key plans, General Arrangement Plans, Part plans, Roof Plan / Terrace Plan and the like.
- b. Excavation drawings, Foundation drawings, Center-line drawings, Floor Plans, Sections, Elevations.
- c. Basic internal electrical and plumbing drawings.

MODULE- 2

Service Drawings:

Services Drawings Making complete set of services drawings for the above said project. The drawings to incorporate services details complete with schedule and all specifications.

The Services Drawings to include:

1. Electrical Layout.
2. Plumbing Layout.
3. Sanitary Layout.
4. Drainage Layout.
5. Rain Water Disposal / Harvesting Layout and Details.
6. Toilet details.
7. Kitchen / Pantry Details.

MODULE- 3

Working Drawings:

Working Details Making complete set of working details for the above said project. The drawings to incorporate details complete with schedule and all specifications.

The Working Details to include:

1. Doors and Windows Drawings and Details.
2. Staircase Details including railings.
3. Details of Grills, Parapet or railings.
4. Typical wall section showing foundation, DPC, skirting, sill, lintel, slab and terracing details.

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MODULE-4

Working drawing details:

Various formats for working drawing preparation, various types of vendor drawings, such as aluminum composite panels, steel doors, fire rated doors, curtain wall systems, aluminum windows, etc.

MODULE-5

Finishing Drawings Making complete set of finishing drawings for the above said project. The drawings to incorporate finishing details complete with schedule and all specifications. The Finishing Details to include:

1. Doors and Windows Frame and Shutter details.
2. Flooring & Skirting pattern and fixing details.
3. Dado / Wall tile pattern and fixing details.
4. Wall Cladding pattern and fixing details.
5. Plaster Pattern with Colour schemes.

REFERENCE BOOKS

1. Building and Construction Authority. (2005). CONQUAS-21. Singapore : The BCA Construction Quality Assessment System.
2. Jefferis, A. and Madsen, D.A. (2005). Architectural Drafting and Design. 5th Ed. New York : Thomson Delmar Learning.
3. Jeong, K-Y. (2010) Architecture Annual. Seoul : Archiworld Co.
4. Joe, B. (Ed). (2002). Details in Architecture: Vol. I-V. Victoria : The Images Publishing group.
5. Osamu, A. W., Linde, R. M. and Bakhoun, N. R. (2011). The professional practice of architectural working drawings. 4th Ed. Hoboken : John Wiley & Sons.
6. Weston, R. (2004). Plans Sections Elevations – Key buildings of the twentieth century. London : Laurence King Publishing.

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COURSE CODE: AR1606	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- THEORY OF DESIGN	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY- EC/PE	1	0	2	3	2	40	60	0	100	3

OBJECTIVES:

- To Understand about post Renaissance period followed by Industrial Revolution and its influence on the built form and settlement patterns; Colonial mercantile capitalism and spread of Western influences in India; Synthesis of architectural styles as modes of political accommodation.
- To Understand the intentions of the period and architects as a solution to the need or demands of the period.

LEARNING OUTCOME

- The students will be able to study the different building and the development of architectural form and character based on the developments in construction and technology exemplified through specific building examples that identify the works of the period.

Module-1

Picturesque and Neo- classical architecture:

Purity and structural honesty of antiquity preferred over ornamentation and exaggeration of Baroque. Representation of ancient Roman monuments in imaginary compositions. Archeological purism and importance of pictorial values in historical settings. Recreation of antique Roman simplicity and splendor for modern living. Study of important palaces and public buildings in Britain and France.

Module-2

Enlightenment and Modern Architecture :

Belief in creation of 'new' and 'ideal' world through return to fundamentals, 'true' and 'original' values. Art revolutions important to the era.

Social intentions and search for ideal world. Expressions of construction and technology. Equating technology and progress with present. Functionalism and functional appropriateness. Thoughts and works of Frank Lloyd Wright, Walter Gropius, Le Corbusier, Mies van der Rohe, Alvar Aalto, Louis Kahn, Dutch De Stijl, Italian futurists and Russian Constructivists.

International style: Oversimplification of the modern Movement into functional, steel and glass, cubes. Monotonous functionalist abstractions and Modernism as a style. Disenchantment of modern cities and fall of modern Movement.

Module-3

Post Modern Architecture:

Post Modern Architecture as a revision of Modern architecture and resistance to functional containers of 60's. Objective, representational and emphasis on content. Pluralistic and differing trends.

Historicism:

Rooted to place and history. Regards of expression: ornaments, symbolism and context with irony and humour, exemplified through the works of James Stirling, Michael Graves, Charles Moore, Arata Isozaki.

Module4

Neo- Modern:

Disregard historical imaginary to recapture ideas for modern architecture of 20's. Hi-tech metal abstractions of Richard Rogers, Norman Foster, showing structure and equipment as implied ornament. References of Russian Constructivists. The early works of New York Five including later

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works of Richard Mies as complicated, exaggerated and sophisticated revival of the modern grid and Corbusier's geometry. Synthesis of Hi-Tech and Historicism in the works Aldo Rossi, Mario Botta, Cesar Pelli.

Module-5

Deconstructive:

Narrative and representational. Sources in Russian Constructivism. Non perfection in the works of Frank Gehry, Peter Eisenman, Bernard Tschumi, Daniel Libeskind, questioning traditional purity of form, geometry and structure.

REFERENCE BOOKS

1. Kenneth Frampton, "Modern Architecture; A Critical History" by, Tames and Hudson
2. William Jr. Curtis, "Modern Architecture since 1900", Phaidon
3. Sir Banister Fletcher, A History of Architecture, University of London, The Athlone Press, 1996.
4. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press, London, 1985.
5. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994
6. Pier Luigi Nervi, General Editor - History of World Architecture - Series, Harry N. Abrams, Inc. Pub., New York, 1972.
7. S. Lloyd and H.W. Muller, History of World Architecture - Series, Faber and Faber Ltd., London, 1986.
8. Gosta, E. Sandström, Man the Builder, Mc.Graw Hill Book Company, New York, 1970.
9. Webb and Schaeffer; Western Civilisation Volume I; VNR: NY: 1962
10. Vincent Scully: Architecture; Architecture - The Natural and the Man Made: Harper Collins Pub: 1991.
11. Charles Jencks, "The language of Post Modern Architecture".
12. Heinrich Clotz, "History of Post Modern Architecture".
13. Marvin Trachtenberg, "Architecture from Prehistory to Post modernism"

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COURSE CODE:AR1607	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- BUILDING SERVICES-IV (ACOUSTICS)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-BS&AE	2	1	0	3	3	40	60	0	100	3

SUBJECT OBJECTIVE

- It shall deal with the physics and perception of sound, the characteristics of sound and vibration in spaces, and their influence in the development of holistic design concepts.

LEARNING OUTCOME

- To make them enable to apply the knowledge in various buildings.
- To get familiarized with sound system equipments, available in market.
- To familiarize the student with laws as per National Building Code of India/BIS.

Module-1

Building Acoustics Introduction :

Characteristics of audible sound – Propagation, Velocity, Frequency, Pitch, Quality/timbre, Loudness and Intensity. Behavior of audible sound in enclosures – Reflection, Absorption, Diffraction and Transmission of sound.

Common acoustical defects and recommended remedies – Echo, Sound foci, Dead spots, Sound shadows, Resonance, Insufficient loudness, External noise and Reverberation. Sabine's expression for calculation of Reverberation time. Absorbents and absorption coefficient.

Noise control:

Noise and its types, Noise pollution. Sources of indoor noise, Indoor noise levels, Planning and design against indoor noise. Sources of outdoor noise, Traffic noise levels, Planning and design against outdoor (traffic & buildings in built-up area) noise. Identification of various sources of noise and recommendations to control them in various types of buildings e.g. – Residential, Educational, Hospital, Office, Hotels & Hostels, Industrial, Laboratories & Test houses, Miscellaneous buildings etc.

Module-2

Constructional measures for sound insulation of buildings :

Materials, Hollow & composite wall construction, Floors & Ceilings. Properties of good acoustical materials. Sound system – Sound reinforcement system, Public address system. Familiarization and understanding of sound system equipment specification e.g. Amplifiers, Microphones, Speakers, Mixers, Conference systems and accessories.

Module-3

Acoustical design principles and factors:

Acoustical design principles for Auditoriums, Cinema halls, Conference rooms etc. and factors viz. Site selection & planning, Dimensions, Shape, Seats & seating arrangements, Treatment of interior surfaces, Reverberation & sound absorption.

Acoustical Design:

The understanding the audio needs and layout for projects e.g. Auditoriums, Cinema halls, Conference rooms etc.

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Module-4

Field / Market Surveys:

Familiarization and understanding of sound system equipment available in market manufactured by various brands e.g. Amplifiers, Microphones, Speakers, Mixers, Conference systems and accessories.

REFERENCE BOOKS

1. National Building Code of India.
2. National Electrical Code.
3. K. A. Siraskar, Acoustics in Building Design, Orient Longman Ltd., 1972.
4. S. Kandaswamy, Architectural Acoustics and Noise Control, Allied publishers Pvt. Ltd., 2005.
5. Catalogues of leading Audio equipments agencies e.g. Philips, Ahuja etc.
6. Vigran, T. E. (2008). Building Acoustics. 1st Ed. Taylor & Francis.
7. Harold, B. M. and Goodfriend, L. Acoustics for Architects. Reinhold.
8. Eagan, D. M. (2002). Concepts in Architectural Acoustics.
9. Cox, T. J. and D'Antonio, P. (2009). Acoustic Absorbers and Diffusers. 2nd Ed. Taylor & Francis.
10. Barron. M. (2009). Auditorium acoustics and architectural design. 2nd Ed. Taylor & Francis.
11. Smith, B. J., Peters, R. J. and Owen, S. (1982). Acoustics and Noise Control. New York : Longman

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COURSE CODE:AR1651(1)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-VI	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ART/ PERFORMING ARTS PROJECT-VI

SUBJECT OBJECTIVE

- To embed stronger and more enduring means of evoking architecture and culture.

LEARNING OUTCOME

- Students will perform different cultural activities in coordination with the stream of architecture being taught in their respective semesters.

MODULE

Exercises on topic of Architectural interest like debate ,skits ,extempore, theatrical exercises individually or in groups to develop their communication skills, using theater as a medium. It will also train the students towards team building.

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COURSE CODE:AR1651(2)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-VI	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

ARCHITECTURAL COMPETITIONS-VI

SUBJECT OBJECTIVE

- To provide a wide range of design solution for creating interest in role of architecture in national and international design competitions.

LEARNING OUTCOME

- Understanding of Contemporary Architecture.
- Development of idea of Team Work.
- The student will learn to formulate architectural concept and learn to work in time frame scenario.

MODULE

Students will participate in different national and international competitions (preferably on projects upto the scale as mentioned in the syllabus of the Architectural Design of that year)- introduced by Architects, Architectural, colleges, firms and forums NGO's. Council of Architecture, NASA, Zonal NASA, etc.

The students will formulate the scheme under the guidance of faculty mentors and prepare basic design layout and competition requirements.

The students will have hands on practice of the rendering techniques.

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COURSE CODE:AR1651(3)	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME: ELECTIVE-VI	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

FOREIGN LANGUAGE-VI (FRENCH)

SUBJECT OBJECTIVE

- To enable students to describe events or things, express wishes, ask questions politely in French, and are able to compare two objects or situations.

LEARNING OUTCOME

- The students will be able to describe events using appropriate adjectives. Categorize the shops in France and be able to converse with a shop keeper. They will be able to express their wishes and desires in a polite manner. They will also be capable to report events, orders and actions. Ability to translate from French to English will be enhanced as vocabulary will be enriched.

MODULE

- Talking about people/objects/places
- Comparing two people/objects
- Comparing possessions and habits
- Describing events & people; the most / least...
- Describing Actions- Formation & usage of adverbs
- Culture & civilization : Shopping in France
- Culture & civilization : Shops- vocabulary & dialogues
- Expressing wishes/polite requests/suggestions & advice
- Expressing a possibility
- Expressing a hypothetical situation
- Usage of Some/ Any/ It /One – 'en'
- Situation / Movement- 'y'
- Reporting actions & events
- Reporting Exclamations/Orders/Questions

REFERENCE BOOKS

- A Propos - A1, Livre de l'eleve et Cahier d'exercices by Christine Andant, Catherine Metton, Annabelle Nachon, Fabienne Nugue
- Harrap's French-English-French Dictionary by Langers
- Get Ready (Writing Skills) by Goyal Saab Publishers
- Tech French by Goyal Saab Publishers
- Mon livre de français 4 by VK publications
- Apprenons la grammaire ensemble by Saraswati House pvt. Ltd
- Notes prepared by French faculty members

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COURSE CODE:AR1651-04	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-VI	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

FURNITURE DESIGN

SUBJECT OBJECTIVE

- To enable the students to understand the design attributes & the construction techniques and basics of furniture making in interior works.
- To understand fundamental aspects and cultural considerations of Furniture Design from Ancient to modern times

LEARNING OUTCOME

- The students will be able to understand the construction techniques and process of basic furniture making in interior works.
- Be able to focus on customized and made to order furniture used as latest trends in interiors and Use of furniture to reinforce interiors and to develop additive interest among students.

MODULE

Analyzing furniture forms and designing furniture forms scientifically based on ergonomics, material design and working parameters and visual perception of furniture as a single form and as a system in a given interior space.

Measurement drawing of a piece of a furniture-plan, elevation, sections and detail drawings on proper scale. Design of a simple object having some moving components like a folding stool or chair.

Preparing execution/shop drawings of furniture, down to the last detail, specifying materials, construction process and including pre & post construction precautions.

Modular aspect and approach towards all types of furniture, cost criteria of design furniture for lower income group in the society.

REFERENCE BOOKS

1. Neuferts Architects Data , Ernst Neufert
2. Time Saver Standards for Interior Design, Joseph Chiara
3. A Visual Dictionary of Architecture, Francis D.K. Ching
4. Creative Interiors (Design of Enclosed Space), Shashi Jain
5. Interior design illustrated , Francis D.K. Ching

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COURSE CODE:AR1651-05	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE NAME-ELECTIVE-VI	1	0	1	2	2	50	0	50	100	-
COURSE CATEGORY-ECPE										

PRODUCT DESIGN

SUBJECT OBJECTIVE

- To give students practical understanding of the product design lifecycle, beginning from idea generation to prototyping and commercialization.
- To equip students to comprehend human dimensions and body movement to arrive at a usable product.

LEARNING OUTCOME

- The students will be able to create new products that stimulate business and contribute to the upkeep of the welfare of communities.

MODULE

A brief introduction to product designing and its various elements.

History of product design, role of product designers. Introduction to applied anthropometry, human activities, their nature and application of human factors data.

Understanding of product development cycle and phases. Information input and processing, the visual display, process of seeing, visual discrimination, quantitative and qualitative visual display. Understanding form, color, symbols, user specific criteria, material, technology, recyclability and packaging. Multiple utility oriented approach to product design.

Design of household elements kitchen racks, cabinets, Brand products etc.

Designing industrial products- watch, automobile headlights etc.

REFERENCE BOOKS

1. The Design of Everyday Things by Don Norman
2. Product Design and Development by Karl Ulrich and Steven D. Eppinger

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COURSE CODE:AR1651-06	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME-ELECTIVE-VI	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-ECPE	1	0	1	2	2	50	0	50	100	-

PATTERN LANGUAGE

SUBJECT OBJECTIVE

- To educate students about the good design practices or patterns of useful organization within a field of expertise.

LEARNING OUTCOME

- With the completion of the syllabus the student will be well versed in the pattern language of the architectural field which is acclaimed nationally and internationally.

MODULE

A brief introduction to the subject enabling a student to make a design for almost any kind of building, or any part of the built environment. Understanding "languages," which, like the languages we speak, allow to articulate and communicate an infinite variety of designs within a formal system which gives them coherence.

VEHICLE & PEDESTRIAN

Parallel road, shopping street, promenade, looped local roads, green streets, network of path and cars, raised walk, bike paths and racks, shielded parking, mini parking lots, car connection, path and goals, path shapes.

HOUSING & NEIGHBORHOOD

Household mix, degree of publicness, house cluster, row houses, children in the city, corner grocer, entrance room, the flow through rooms, short passages, staircase as a stage, six foot balcony, open stairs.

OPEN SPACES

Common land, connected play, local sports, street café, bus stop, food stands, public outdoor room, courtyard which live.

BUILDING FRAME & OPENING

Structure follows social spaces, efficient structure, staircase volume, windows overlooking life, perimeter beam, column space, duct space, dormer windows, natural doors and windows, window sill, low doorway.

PUBLIC WORK SPACES

Flexible office space, communal eating, small work groups, reception, place to wait, bulk storage, sunny place, arcades, roof gardens.

REFERENCE BOOKS

- A Pattern Language by Christopher Alexander.

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COURSE CODE:AR1652	SCHEME OF TEACHING					SCHEME OF EVALUATION				
	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE NAME- COMPUTER STUDIO-III (3DSMAX,REVIT ADVANCE)										
COURSE CATEGORY- PAEC/SEC	1	0	2	3	2	50	0	50	100	-

SUBJECT OBJECTIVE

- To enable students to understand and apply skills and information to build comprehensive Building Information Models (BIM) using appropriate Digital software and Media.

LEARNING OUTCOME

- Students gain knowledge on the implementation of BIM concepts and Understanding lifecycle of a building from planning, design, construction and operations.
- About BIM for building energy performance, simulation, construction and administration.

Module 1

BIM:

Energy simulation for conceptual BIM models using massing- Detailed modeling using design elements- Rapid energy modeling and simulation with software. Conceptual Energy Analysis features to simulate performance. To produce energy consumption, carbon neutrality and renewable potential reports.

Module 2

4D modeling BIM:

Introduction and theoretical information on the following topics- Model based Cost Estimating- Challenges in cost estimating with BIM - Cad geometrics verses BIM element description- Visual data models - Material substitutions and value engineering- detailed estimates and take- off sheets- XML and automated cost estimate- project phasing and management- 4D modeling BIM for project lifecycles.

Module 3

Introduction to 3D Max:

Create interior walkthroughs for small spaces such as bedroom, office etc. by adding scenes, furniture, texture, finishes with lighting effect and camera angles. Create building exterior walkthroughs by adding scenes, trees, human figures, cars, sun light effect and camera angles.

Module 4

Exercises:

Making Three- dimensional photorealistic rendered architectural models for any one of the architectural design assignments completed in previous semesters and to create walkthrough of the same.

REFERENCE BOOKS

1. BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors.
2. Building Information Modeling For Dummies
3. BIG BIM, little BIM: The Practical Approach to Building Information Modelling.
4. The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering, and Construction.

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 - A signature "Chamie" in the middle right.
 - A signature "A. J. J." in the bottom right.
 - A signature "M. J. J." in the bottom left.
 - A signature "A. J. J." in the bottom center.
 - A signature "A. J. J." in the bottom right.

COURSE CODE:AR1653	SCHEME OF TEACHING					SCHEME OF EVALUATION				
COURSE NAME- NTCC – V (EDUCATIONAL TOUR /DOCUMENTATION + WORKSHOP)	L/S	T	P/V	HOURS	CREDIT	CIA	ESE	P/V	TOTAL	Hrs
COURSE CATEGORY-PAEC/PAECC	0	0	0	0	1	50	0	50	100	—

OBJECTIVES

- To prepare students to integrate theory and practice from courses through educational tours/documentation & workshops.

LEARNING OUTCOME

- The student will able to develop and improve their planning concepts and ideas through critical thinking
- Understand inception, scheduling, execution and dissemination in the context of live architectural planning through educational tours/documentation & workshops.

Module

- An exposure to be given to students of the cultural heritage buildings, buildings of importance to the nation and society, urban and rural areas and their precincts.
- The students are introduced to the planning aspects of buildings of importance, their functional and aesthetic characteristics via discussions of the tour guide/ coordinator of workshop
- Preparation of Educational tour reports / Workshop reports by the group /groups of students

Guidelines for Educational tour Report/ Workshop Report

The report has to be not less than 50 pages. The report has to be spiral bound. The drawing and sketches should be properly scaled and labeled with necessary legends and detailing.

Language	English
Paper Size	A4
Margin	The left and right margin of 1.25 inches. The top and bottom margin of 1.00 inch
Typing	On both sides of the page. The text will follow line spacing of 1.5 lines and double justified.
Arrangement of Contents	Every NTCC Project Report should have three parts: the pre pages, the main text and the reference material. The following is the order: - Preliminary Pages: - Title page - Declaration - Necessary Approvals Page - Acknowledgement - Table of Contents - Text: Chapters: (Building /area wise) & sub-sections - Area Context, Data Collection, Analysis, Conclusions, Recommendations & Proposals - Reference Materials: Appendix
Tables & Figures	These shall be placed immediately after the paragraph that contains it. Each table

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	& figure has to be numbered consecutively within chapters.
References (if any)	These have to be listed alphabetically. Retrieval data must be listed in references. Personal interviews/ raw data shall not appear in the reference list.
Appendices (if any)	Contains supplementary of illustrative material on explanatory data to be incorporated in main document as per the order of appearance in the document.

The Break up (components and their weightage) of continuous internal assessment are given as under :

S.No.	Title	CIA (MM 50)
1.	Introduction & aim of Educational Tour/Workshop	5
2.	Necessary Approvals	5
3.	Case Studies/ Historical Background of the place or building	10
4.	Photographs of details, sketches, Plans (key plans /measured drawings/schematic plans, etc.)	20
5.	Learning outcomes/conclusions drawn	10

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