

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

BACHELOR OF ARCHITECTURE

SEMESTER - III

SCHEME OF TEACHING AND EXAMINATION (EFFECTIVE FROM SESSION 2017 - 18)

S. NO.	SUBJECT CODE	NAME OF THE SUBJECT	PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
			LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
						CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	RAR - 301	ARCHITECTURAL DESIGN - III	1	0	5	30	70	100	75	25	100	200	6	6+3 HRS.
2	RAR - 302	CONSTRUCTION & MATERIALS - III	2	0	4	25	50	75	50	25	75	150	4	3 HRS.
3	RAR - 303	ARCHITECTURAL STRUCTURES - III	2	1	0	15	35	50	50	0	50	100	2	3 HRS.
4	RAR - 304	ARCHITECTURAL DRAWING - III	2	2	2	15	35	50	50	0	50	100	3	3 HRS.
5	RAR - 305	ARTS & GRAPHICS - III	1	0	2	15	35	50	50	0	50	100	2	3 HRS.
6	RAR - 306	ARCHITECTURAL SERVICES - I	1	1	0	15	35	50	50	0	50	100	2	3 HRS.
7	RAR - 307	HISTORY OF ARCHITECTURE - II	2	1	0	15	35	50	50	0	50	100	2	3 HRS.
8	RAR - 308	RESEARCH / SEMINAR / WORKSHOP - II	1	1	0	15	35	50	0	0	0	50	1	X
9	RAR - 309	CLIMATOLOGY	1	1	0	15	35	50	50	0	50	100	2	3 HRS.
		TOTAL	13	7	13							1000	24	

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

BACHELOR OF ARCHITECTURE

SEMESTER - IV

SCHEME OF TEACHING AND EXAMINATION (EFFECTIVE FROM SESSION 2017 - 18)

S. NO.	SUBJECT CODE	NAME OF THE SUBJECT	PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
			LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
						CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	RAR - 401	ARCHITECTURAL DESIGN - IV	1	0	5	30	70	100	75	25	100	200	6	6+3 HRS.
2	RAR - 402	CONSTRUCTION & MATERIALS - IV	2	0	4	25	50	75	50	25	75	150	4	3 HRS.
3	RAR - 403	ARCHITECTURAL STRUCTURES - IV	2	1	0	15	35	50	50	0	50	100	2	3 HRS.
4	RAR - 404	ARCHITECTURAL DRAWING - IV	2	2	2	15	35	50	50	0	50	100	3	3 HRS.
5	RAR - 405	ARTS & GRAPHICS - IV	1	0	2	15	35	50	50	0	50	100	2	3 HRS.
6	RAR - 406	ARCHITECTURAL SERVICES - II	1	1	0	15	35	50	50	0	50	100	2	3 HRS.
7	RAR - 407	HISTORY OF ARCHITECTURE - III	2	1	0	15	35	50	50	0	50	100	2	3 HRS.
8	RAR - 408	RESEARCH / SEMINAR / WORKSHOP - III	1	1	0	15	35	50	0	0	0	50	1	X
9	RAR - 409	VERNACULAR ARCHITECTURE	1	0	1	15	35	50	50	0	50	100	2	3 HRS.
		TOTAL	13	6	14							1000	24	

B. ARCH. SEMESTER – III
RAR – 301, ARCHITECTURAL DESIGN - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	30	70	100	75	25	100	200	6	6 + 3 HRS.

OBJECTIVES

- To familiarize students with a simple residential unit.
- Utilize varying methods for developing out of the box creative skills for design of small projects.
- Comprehension of arrangement /organization of spatially/ functionally similar units resulting in varied outdoor spaces.
- To assimilate the modifying spatial qualities of indoor & outdoor spaces due to varying configurations.
- Field trips to relevant sites shall be compulsory for all assignments.

Module-1 Study	Lectures on Elements of Space making like Floor, Wall, Door, Window, Column, Stairs, Roofs etc.
Module -2 Learning	Lectures on interpreting spatial configuration for specific design programme. Configuration / array of multiple repetitive units organized on basis of functional, geometric and visual order.
Module-3 Design	Of simple buildings with multiple use, utilizing lessons from space-making and lateral thinking exercises. Understand Grouping of simple buildings integrating transforming spatial qualities of indoor and outdoor spaces.

SUGGESTED STUDIO EXERCISES

1. Space making exercises with varying configurations of elements like columns, walls, floors, etc
2. Design of buildings like Residence, Panchayat Bhawan, Ashrams, Artist Studio, Office cum Houses, Tourist Bungalows, club or similar projects.

REFERENCE BOOKS

1. Ching, Francis D.K. Form Space & Order.
2. Rasmussen. E. Experiencing Architecture.
3. Zevi, Bruno. Space Time and Architecture.
4. Pandya, Yatin. Elements of Space-making.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets of Module - 1	2	5	10
2	Drawing Sheets of Module - 2	1	10	10
3	Design Exercises (Minor) of Module 3	1	15	15
4	Design Exercises (Major) of Module 3	1	35	35
			TOTAL	70

B. ARCH. SEMESTER – III
RAR – 302, CONSTRUCTION & MATERIALS – III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	75	50	25	75	150	4	3 HRS.

OBJECTIVES

- 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.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1 Stone	Classification, Availability, Characteristics and Uses.
Module-2 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-3 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-4 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
Module-5 Site Exposure	Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

LIST OF ASSIGNMENTS

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.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-6 Stone Work	Elementary Stone Masonry, Types of joints. Random, Course and Ashlar Stone Work in walls.
Module-7 Door (Timber)	Types and details of Panelled door shutters and Mosquito proof door shutter.
Module-8 Window / Ventilator (Timber)	Types of Windows / Ventilators and details of glazed window and ventilator shutters and frames.
Module-9 Roof Terracing	Complete process of laying of terracing with provisioning of Gola & Khurra etc. - Lime concrete, Mud phaska with brick tiles, Brick coba.
Module-10 Temporary Timbering	Timbering of shallow trenches.

CONSTRUCTION PLATES

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.

APPROACH

- 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 climatic conditions.
- Site visits and market surveys will be an integral part of sessional work.

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.
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
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. Raghuvanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Construction Sheets/Plates of Module 6 – 10	6	4	24
2	Tutorial/Quiz/Sketches of Module 1 – 5	2	3	6
3	Market Survey & Seminar of Module 1 – 3	1	10	10
4	Workshop/Yard of Module 4	1	4	4
5	Site Visit Reports of Module 5	2	3	6
			TOTAL	50

B. ARCH. SEMESTER – III
RAR – 303, ARCHITECTURAL STRUCTURES - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES:

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

Module-1	Elastic Theorems & Energy Principles and its Application in Simple Cases.	Introduction, Strain energy stored due to axial loading and due to bending, Law of reciprocal deflections, Betti's law, The first theorem of Castiglione, The second theorem of castigliano (Introduction only).
Module-2	Statically Indeterminate Structures	Introduction, Degree of indeterminacy, External and internal indeterminacy, Calculation of degree of indeterminacy for beams and frames.
Module-3	Fixed & Continuous Beams	Fixed beams - Introduction, B.M. Diagram for a fixed beam for various loading, Effects of sinking of support, advantages and disadvantages of fixed beams. Continuous beams - Introduction, Clapeyron's theorem of three moments for two to three span of continuous beam, Effects of sinking of support.
Module-4	Moment Distribution Method	Basic Proposition, Relative stiffness, Analysis of continuous beams and portal frames for simple loading.
Module-5	Slope Deflection Method	Introduction, Basic concepts, Basic formulae, Application to analyse Continuous beams and Portal frames for simple loadings.

REFERENCE BOOKS

- Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
- Punmia P. C., "Strength of Materials & Mechanics of Structures".
- Khurmi R. S., "Strength of Materials".
- Senol Utku, "Elementary Structural Analysis".
- Rama Armarutham S., "Strength of Materials".
- C.K. Wang, "Theory of Structures".
- Ramamrutham.S, Narayan. R, "Theory of Structures".

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial of Module 1 - 5	5	7	35
			TOTAL	35

B. ARCH. SEMESTER – III
RAR – 304, ARCHITECTURAL DRAWING - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	2	2	15	35	50	50	0	50	100	3	3 HRS.

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.
- To develop or upgrade an understanding about AutoCAD 3D, as an important tool for drafting, designing, analyzing and representation of the drawings in a desired manner.

SECTION – A, ARCHITECTURAL DRAWING (MANUAL)

Module-1 Shades and Shadows

Values in Shades and shadows.
 Constructing plan shadows (point, line and plane).
 Constructing shadows in elevations (point, line and plane).
 Short –cut methods for Constructing shadows.
 Presentation techniques in Sciography.

Module-2 Presentation

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 three dimensioned effect.

SECTION – B, ARCHITECTURAL DRAWING (COMPUTER)

Module-3 Work with 3D Models

Launching AutoCAD 3D, Using application menus, Create 3D models, Modify 3D solids and surfaces , Create sections and 2D drawings from 3D models.

Module-4 Setting Up and Using the 3D Drafting Tool

Types of 3D drafting tools, 3D keyboard commands, Materials and textures, Reference other drawing files, Link and embed data (OLE), Work with data in other formats and exporting 3D model to various software's.

Module-5 Using and Exploring 3D Models

Specify 3D views, Define a 3D view with a camera, Create preview animations, Create motion path animations, Creating a simple 3D mesh, Editing faces and edges, Creating mesh surfaces, Converting meshes to solids, Editing surfaces.

Module-6 Effective Presentation

Layer management, Exporting 3D to work in other software. Plotting and publishing the drawing in modal space and paper space.

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. Introducing AutoCAD and AutoCAD LT - GeorgeOmura
5. Mastering AutoCAD – GeorgeOmura
6. AutoCAD 2013 and AutoCAD LT 2013 “BIBLE” - Ellen Finkelstein

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets			
a	of Module - 1	5	2	10
b	of Module - 2	6	2.5	15

2	Computer Lab of Module 3, 4, 5 & 6	4	2.5	10
			TOTAL	35

B. ARCH. SEMESTER – III
RAR – 305, ARTS AND GRAPHICS - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	2	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- 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.

SECTION – A, ARTS AND GRAPHICS

Module-1 History of Indian Art	A brief introduction to the Historical timeline of Indian Art, from earliest times to Mauryan, Gupta, Mughal and British period.
Module-2 Advanced Rendering Techniques	Use of Rendering techniques in various mediums like oil pastels, dry crayons, water colours, charcoal and poster colours, pen and ink
Module-3 Design of motifs & objects	Designing small scale models of gate, grill, railing and jaali in suitable materials. Enlargement and rendering in Ink the Indian Decorative Motifs.

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

CRITERIA FOR ASSESSMENT OF ASSIGNMENTS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets/Sketches of Module - 2	4	5	20
2	Seminar of Module – 1	4	2.5	10
3	Design & Model of Module – 3	1	5	05
			TOTAL	35

B. ARCH. SEMESTER – III
RAR – 306, ARCHITECTURAL SERVICES – I (WATER SUPPLY & SANITATION)

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- To understand the basic principles of water supply and sanitation.
- To make them enable to draw the piping system (pipe above ground and underground) for different types of buildings.
- To familiarize the student with plumbing bye laws as per BIS.

SECTION – A, WATER SUPPLY

Module-1 Water Supply

Need to protect water supply, Requirements of water supply to different types of buildings.
 Sources of water supply, Quantity and quality of water.
 Conveyance and distribution of water, Overhead tank, Underground tanks, Pipe appurtenances.
 Hot and cold water supply system in a low rise and high rise buildings.
 Distribution system in campus, Pipes their size, Jointing and different fittings.

SECTION – B, SANITATION

Module-2 Sanitary Engineering

Purpose and principles of sanitation, Collection and conveyance of waste matter.
 Quantity and Quality of refuse, Design and construction of sewer's and sewer appurtenances.
 Garbage and sewage disposal.
 Roof and surface water drainage. Rain water storage and water harvesting principles and methods.
 Sanitary appliances, Traps their variety, Pipes and joints, Sanitary pipes works below and above ground level.

SECTION – C, APPLICATION

Module-3 Plumbing & Sanitary Drawing

The plumbing and sanitary system for individual spaces e.g. kitchen, toilet, wash area, utility etc.
 The plumbing and sanitary system for a residence.

REFERENCE BOOKS

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

CRITERIA FOR ASSESSMENT OF ASSIGNMENTS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Sheets of Module - 3 (Service Drawings/Sketches)	2	7	14
2	Tutorial of Module – 1, 2 & 3	3	7	21
			TOTAL	35

**B. ARCH. SEMESTER – III
RAR – 307, HISTORY OF ARCHITECTURE – II**

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- To inform about the development of Indian architecture and its contextual and traditional aspects.
- 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 various aspects of Hindu architecture.
- To comprehend and analyze spatial character, scale, and structure through historical and traditional built heritage.
- To comprehend and relate to the theoretical basis of historical and traditional Hindu architecture.

Module-1	Indus Valley civilization	Town planning principles, cultural ethos, economy exemplified with examples from Mohenjodaro and Harappa.
Module-2	The Aryan civilization	With its emphasis on the Vedic town plan, its motifs and patterns. The brick altars and their significance.
Module-3	Buddhist Architecture	Typology of lats, eddicts, stupas, viharas, and chaityas, both in rock-cut or otherwise. The techniques used for rock-cut spaces and free standing built masses. The spatial and functional connotations.
Module-4	Buddhist Theory	The Buddhist philosophy and its imprint in built space.
Module-5	Hindu Architecture- Indo-Aryan	The evolution of the temple form, evolution of the shikhara in north India. The three schools of architecture—the Gujarat, the Khajuraho, and the Orrisan styles. Comparison in spatial attributes, scale and detail.
Module-6	Hindu Architecture- Dravidian	The evolution of the vimana and the contributions of the Chalukyas, the Pallavas, the Pandyas and the Cholas. The contributions of the Nayaks to the temple cities. The city morphology, spatial diversity and planning criteria.
Module-7	Hindu Theory	Hindu philosophy and its imprint in temples/traditional houses and other built structures. Mandala and the geometric grid in temple plans. The proportional theory in temple elevation.
Module-8	Jain Architecture	The temple cities of Palitana, Mount Abu and Girnar.
Module-9	Jain Theory	The Jain philosophy and its imprint in built form. The Jain mandalas.
Module-10	Measured Drawing	Measured Drawing of a historical precinct.

REFERENCE BOOKS

1. Stella Kramrisch, The Hindu temple, Volume 1 & 2, Motilal Banarsidass Publications, 1996.
2. Percy Brown, Indian Architecture (Buddhist and Hindu period), D.B.Taraporewala Sons & co Pvt. Ltd. 1965
3. Volwahren, Andreas, Living Architecture
4. Satish Grover, The Architecture of India- Volume 2, Vikas, 1980.
5. Henri Stierlin, Anne Stierlin, Hindu India: from Khajuraho to the temple city of Madurai, Taschen, 1998.
6. James Fergusson, History of Indian & Eastern Architecture, 2007
7. C. Batley, Design Development of Indian Architecture, John murray, London, 1934.
8. A. Cunningham, Archaeological Survey of India, Vol. I – XXIII, Simla, Calcutta, 1903-30.
9. M. Edwards, Indian temples & Palaces, Paul Hamlyn, London.
10. Christopher Tadgell, Indian & South Asia: The Buddhist & Hindu Tradition, Ellipses, 1998.
11. Surendra sahai, Indian architecture, Prakash books, 2006.
12. Ernest Binfield Havell, Indian Architecture, J. Murray, 1913.
13. Benjamin Rowland, The Art & Architecture of India: Buddhist, hindu, jain. Penguin books, 1953.
14. K.V,Soundra Rajan, Indian Temple Styles: the personality of Hindu Architecture.
15. Giles Henry Rupert Tillotson (ed.), Paradigms of Indian architecture: Space & Time in Representation & Design, Psychology Press, 1998.
16. Adam hardy, Indian temple Architecture- form & transformation, Abhivav Publications, 1995.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Sheets/Sketches of Module 1 - 9	6	2.5	15
2	Tutorial/Quiz of Module 1 - 9	3	2.5	7.5
3	Seminar	1	5	5
4	Measured Drawing & Model of Module - 10	1	7.5	7.5
			TOTAL	35

B. ARCH. SEMESTER – III
RAR – 308, RESEARCH / SEMINAR / WORKSHOP - II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	0	0	0	50	1	-

OBJECTIVES

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

Module-1	Introduction	Aspects of Analysis of an Architectural project
Module-2	Technical Writing	Critical Appreciation of a Project: Analyzing on the basis of site, Built Form and Space, Spatial Organization, Materials and Techniques, Elements and Special Characteristics, Activity Pattern.
Module-3	Book Reviews	Review of Book with presentation of the précis.

LIST OF ASSIGNMENTS

1. Review of an architectural book/books prescribed by subject teacher.
2. Report and presentation on ongoing architectural project.
3. 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. Fundamentals of Design

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial of Module - 1	1	5	5
2	Tutorial of Module - 2	3	5	15
3	Tutorial of Module - 3	1	15	15
			TOTAL	35

**B. ARCH. SEMESTER – III
RAR – 309, CLIMATOLOGY**

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- Acquainting the students with human thermal comfort as an essential function of a building, its analysis & use in Architecture.
- To familiarize students with the elements constituting climate and their role in creating responsive designs.
- Understanding the characteristics of varied tropical climates and expected responses of buildings in specific climate types
- To utilize existing traditional/vernacular/ historical structures in the city as case study to learn the various attributes of climate & the desirable responses.

Module-1	Introduction to climate	Importance of climate in architecture. Factors affecting climate. Elements of climate: solar radiation, temperature, wind, humidity & precipitation and their measurement.
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	Human thermal comfort	Study of body's heat production & heat loss, comfort zone, bio-climatic chart, effective temperature isopleths etc. Various models of Thermal Comfort: Static & Adaptive Mode, thermal indices & their applicability.
Module-4	Solar chart	Understanding the solar position of a place, azimuth, altitude, incidence, using shadow angle protractor for designing shading devices.
Module-5	Daylight	Natural lighting, glare, day light factor & factors affecting day-lighting in various space types, principles of day-lighting in tropics.
Module-6	Ventilation & Air Movement	Requirement, size & position of openings, Air-flow pattern inside & outside buildings.
Module-7	Orientation	Orientation of buildings in relation to sun & wind.

LIST OF ASSIGNMENTS (Field Exercises & Drawings)

1. Understanding tools & instruments utilized for measurement of climatic elements using the climatology lab & meteorological department.
2. Documenting local case studies of vernacular/ traditional/ historical buildings for understanding their responses to prevailing climate.
3. Collecting data of temperature, humidity, radiation light & wind for specific cities and making solar charts, bio-climatic charts & Mahoney tables for the same.

REFERENCE BOOKS

1. Koinesberger, O. Tropical climate.
2. Krishan, Arvind. Climate Responsive Architecture.
2. Brown, G.Z. Sun Wind & Light.
3. Olgay, 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, Sanjy Puri, among others to understand responses of varied designers to the existing environment.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial & Lab of Module - 1	2	5	10
2	Seminar / Presentation of Module - 2	1	5	5
3	Drawing Sheets / Presentation of Module – 3 - 7	4	5	20
			TOTAL	35

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B. ARCH. SEMESTER – IV
RAR – 401, ARCHITECTURAL DESIGN - IV

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	30	70	100	75	25	100	200	6	6 + 3 HRS.

OBJECTIVES

- 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.
- Studying the vernacular architecture of varied climatic zones to examine their response to the existing conditions.
- Analysing the spatially rich vernacular architecture especially of the Indian subcontinent to derive useful learnings for prevailing climate & region.
- The design studio should be linked with the simultaneous theory subject of vernacular architecture.
- Recognizing the relevant materials & building techniques suitable for that region & explore their applicability in design.
- Learn building on sloping sites or with unique topography.
- Field trips to relevant sites shall be compulsory for all assignments.

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	Lessons from Vernacular	Lectures on concept of vernacular & lessons to be learnt. Detailed study of a vernacular settlement remarkable for its spatial quality, material, and construction technology, characteristic for that region & climate. Analysis of the selected settlement in light of their spatial roles, human scale, activity, space & form and consequently the design considerations. Lectures on the spatial attributes of the resultant open & built of the vernacular and lessons to be learnt from the study & their juxtaposition.
Module-3	Design of climate responsive buildings	Designing a multi-functional building in a typical climate zone utilizing the developed design criteria.
Module-4	Design on sloping site	Design exercise on sloping terrain with specific orientation & climatic conditions.

SUGGESTED STUDIO EXERCISES

1. Studies of various climates; responses of vernacular/ traditional in those conditions& establishing design criteria.
2. Study tours to relevant rural/urban destinations for primary documentation.
3. Design of multi-functional building like Motels, Hostels, schools, Tourist Resort, Ashrams.
4. Design on sloping site with unique topography for structures like a simple guest house, tourist complex or museums.

REFERENCE BOOKS

1. Krishan, Arvind Climate Responsive Architecture.
2. Brown, G.Z. Sun Wind & Light.
3. Olgay, V. Design with Climate.
4. Yeang, Ken. Designing with Nature: The Ecological basis for Architecture Design.
5. Works of Architects like HasanFathy, B.V. Doshi, Charles Correa, Ken Yeang, among others to understand responses of varied designers to the existing environment.
6. Rappoport, Amos. House Form & Culture
7. Oliver, Paul. Shelter & Form
8. Oliver, Paul. Encyclopedia on Vernacular Architecture.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Seminar / Presentation of Module - 1	1	10	10
2	Drawing Sheets & Model of Module - 2	1	15	15
3	Design Exercises (Minor) of Module - 4	1	15	15
4	Design Exercises (Major) of Module - 3	1	30	30
			TOTAL	70

B. ARCH. SEMESTER – IV
RAR – 402, CONSTRUCTION & MATERIALS – IV

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	75	50	25	75	150	4	3 HRS.

OBJECTIVES

- 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.

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.

Module-3 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.

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-4 Workshop/Construction Yard Practice

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

Module-5 Site Exposure

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

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.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-6 Door

(Timber Products)

Types and details of Flush door shutter with finishes.

Module-7 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.

Module-8 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-9 Panelling

(Timber &

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

Timber Products)	
Module-10 Brick Work Temporary Constructions	Shoring (Raking, Flying and Needle). Underpinning.

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.

APPROACH

- 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.
- Site visits and market surveys will be an integral part of sessional work.

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.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Construction Sheets/Plates of Module 6 – 10	6	4	24
2	Tutorial/Quiz/Sketches of Module 1 – 5	2	3	6
3	Market Survey & Seminar of Module 1 – 3	1	10	10
4	Workshop/Yard of Module 4	1	4	4
5	Site Visit Reports of Module 5	2	3	6
			TOTAL	50

B. ARCH. SEMESTER – IV
RAR – 403, ARCHITECTURAL STRUCTURES - IV

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES:

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

Module-1	Introduction to Design Methods	Introduction, Working stress design, Ultimate load design, Limit state design, Limit state design versus Working stress design. Building code.
Module-2	Introduction (Limit state design method)	Understanding of Limit state, Characteristic strength and characteristic load, Design values, Partial safety factors, Factored loads, Stress strain relationship for concrete and steel, Yield stress, Provisions of IS codes, Loads and Load combination
Module-3	Detailing of Reinforcement	Introduction, Requirements of good detailing, Nominal cover to reinforcement, Spacing of reinforcement, Reinforcement requirements, Reinforcement splicing, Anchoring reinforcing bars in flexure, Curtailment of tension reinforcement in flexural members, Bar bending schedule.
Module-4	Analysis & Design of Singly & Doubly Reinforced Rectangular sections and Flanged Beams section	Introduction, Bending of beam assumption, Moment of resistance, Modes of failure, Maximum depth of neutral axis, Limiting values of tension steel & moment of resistance.
Module-5	Shear and Development Length	Introduction, Shear stress, Diagonal tension, Shear reinforcement, spacing of shear reinforcement, Development length, Anchorage bond, Flexural bond.

REFERENCE BOOKS

- Ashok kumar jain “Reinforced concrete” Limit State design.
- Punmia P. C., “Strength of Materials & Mechanics of Structures”.
- Khurmi R. S., “Strength of Materials”.
- Senol Utku , “Elementary Structural Analysis”.
- Rama Armarutham S., “Strength of Materials”.
- M.L. Gambhir, “Fundamentals of Reinforced Concrete Design”.
- P.C. Varghese., “Advanced Reinforced Concrete Design”.
- Dr. B.C. Punmia; Er. Ashok Kumar Jain; Dr. Arun K.Jain “R.C.C.Designs”

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial of Module 1 - 5	5	7	35
			TOTAL	35

B. ARCH. SEMESTER – IV
RAR – 404, ARCHITECTURAL DRAWING - IV

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	2	2	15	35	50	50	0	50	100	3	3 HRS.

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.
- To develop the skills free hand sketching.
- To develop or upgrade an understanding about Autodesk Revit Architecture, as an important tool for drafting, designing, analyzing and representation of the drawings in a desired manner.

SECTION – A, ARCHITECTURAL DRAWING (MANUAL)

Module-1 Sciography

Shades and Shadows of objects and building elements cast on irregular surfaces, rendered in suitable medium.

Shades and shadows in perspective views for exteriors.

Shades and Shadows cast by point source of light in interiors.

Module-2 Perspective Drawing

Two-point exterior perspective views, using measure point method, of simple & medium sized buildings- isolated or in-group, showing shades and shadow using different media like-Pencil, Pen-Ink, Water Colour, Poster, and Airbrush etc.

One point perspective drawing of interiors rendered in different media.

Two point perspective drawing of interiors rendered in different media.

Introduction to short cut methods in perspective drawing.

Free hand perspective.

Other innovative methods of perspective presentation techniques should be encouraged.

SECTION – B, ARCHITECTURAL DRAWING (COMPUTER)

Module-3 Getting Started Revit Architecture

Introduction, Modifying the view, Common tasks, System options, File locations, Spelling options, Settings, Keyboard shortcuts, Levels and grids, Zooming, Steering wheels.

Module-4 Building the Model and Modify

Walls, Doors, Windows, Components, Architectural columns, Roofs, Ceilings, Floors, Openings, Model text, Model lines, Compound structure, Sloped surfaces, Stairs, Ramps, Railings, Adding and modify curtain wall. Attaching wall to roof, Modifying the entry deck, Modifying the roofs.

Module-5 Presentation

Dimensions, Keynotes, Tags, Symbols, Adding legend views, Creating a detail callout, Adding filled and masking regions, Using detail components, Creating sheet, Sheet properties

REFERENCE BOOKS

1. Interiors: Perspective in Architectural Design Graphic - SMA Publishing Co. Ltd.,Japan, 1967.
2. Ernest Norling, Perspective drawing, Walter Foster Art Books, California, 1986.
3. Bernard Alkins - 147, Architectural Rendering, Walter Foster Art Books, 1986.
4. Rober W.Gill, Advanced Perspective, Thames and Hudson, London, 1974.
5. Autodesk Revit Architecture 2012: No Experience required – Eric Wing
6. Mastering Autodesk Revit Architecture 2012 – James Vandezande, Phil Read, Edd

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets			
a	of Module - 1	5	2	10

b	of Module - 2	5	3	15
2	Computer Lab of Module 3, 4 & 5	4	2.5	10
			TOTAL	35

B. ARCH. SEMESTER – IV
RAR – 405, ARTS AND GRAPHICS - IV

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	2	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- To develop an appreciation and understanding of Indian contemporary art and trends.
- To develop skills of making mural, sculpture, furniture, pottery and fountains from fiber glass, mild steel, cast iron, stainless steel, wood, plaster of paris, terracotta, cement concrete and ceramics etc.
- To develop skills of graphic printing techniques.

SECTION – A, ARTS AND GRAPHICS

Module-1 History of Art

Brief Introduction to Renaissance in Indian art i.e. 19th century, Post-independence art of India.

An overview of Contemporary arts and artist in India, Works of AbanindraNath Tagore, NandLal Bose, Jamini Roy, Amrita Sher Gill, M.F. Hussain, SatishGujral and S.H.Raza.

Module-2 New Techniques in Art

Making graphic prints by using different technique of print making i.e. wood cut print, linocut prints, and serigraphy.

Creation and use of different type of textures.

Searching natural objects and enlargement in clay

Drawing and Rendering of Designs up to material finish.

Module-3 Design

Designing of murals, sculptures, furniture, pottery and fountains for outdoors in suitable materials.

Drawing and designing of decorative elements for Interior display (drawing room, living room etc.)

Understanding of sensibilities of materials by transforming in different mediums.

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

CRITERIA FOR ASSESSMENT OF ASSIGNMENTS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets/Sketches of Module - 2	4	5	20
2	Seminar of Module – 1	2	5	10
3	Design & Model of Module – 3	1	5	05
			TOTAL	35

B. ARCH. SEMESTER – IV
RAR – 406, ARCHITECTURAL SERVICES – II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- 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.

SECTION – A, ELECTRICAL

Module-1 Electrical

Introduction –

Terminology and architectural symbols (as per NBC/NEC) for electric installations in buildings.

Need to generate and save electricity, transmission and distribution of electricity (single and three phases), procuring service connection.

Familiarization to various lighting accessories, wires and cables, metering, distribution panels / boards etc. for single and three phase supply.

Guidelines for installation of fittings.

Design of simple electrical circuits –

Introduction to simple light and fan circuits.

System of connection of appliances and accessories e.g. series and parallel connection, joint box system, looping-in system.

Systems of wiring –

Basic considerations.

Various types of internal wiring systems e.g. cleat, casing and capping, batten and conduit (surface & concealed).

Protection of electrical installation and human life –

Basic considerations.

Protection against excess current, short circuit earth fault and protection against electric shock.

Introduction to various types of protection devices e.g. switches, fuses and circuit breakers.

Need for earthing of domestic fittings and appliances, earthing and its relation with soil resistivity, earth electrodes, earth wires.

Load assessment and selection of appropriate cross section of the conductor.

SECTION – B, ILLUMINATION

Module-2 Illumination

Introduction –

Terminology and unit.

Light and its characteristics – scattering, propagation, transmission, reflection, absorption, refraction and dispersion of light. Electromagnetic spectrum and visible radiation.

Illumination –

Types of illumination schemes e.g. Ambient, Task, Focal and Decorative etc. Design considerations for illumination Schemes.

Methods for lighting calculation – Watts per square meter, Light flux and Point to point method.

Sources of light (Electrical)–

Familiarization and understanding of electrical sources of light e.g.

Thermal radiators - Incandescent, Halogen.

Discharge lamps– Low pressure (fluorescent, compact fluorescent, sodium, cold cathode neon), High pressure (mercury, metal halide, sodium).
New technologies - LED, Fiberoptics.

Luminaries –

Types of Luminaries – Indirect, Semi-indirect, General diffusing, Semi-direct and Direct.

SECTION – C, APPLICATION

Module-3 Electrical Drawing

The understanding of electrical needs for individual spaces e.g. Living room, Dining room, Bed room, Kitchen, Toilet, Staircases, and Corridors etc.
The electrical layout drawing for a residence.

Module-4 Field / Market Surveys

Familiarization to types of electrical luminaries available in market, manufactured by various brands e.g. Recessed mounted luminaries, Spot / Projectors, Surface mounted luminaries, Decorative luminaries, Pendant luminaries, Free-floor-standing luminaries, Up lights, Trunking lighting systems, Down Lights.

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.

CRITERIA FOR ASSESSMENT OF ASSIGNMENTS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Sheets of Module - 3 (Service Drawings / Sketches)	1	10	10
2	Tutorial of Module – 1 & 2	2	7.5	15
3	Market Survey & Seminar of Module - 4	1	10	10
			TOTAL	35

B. ARCH. SEMESTER – IV
RAR – 407, HISTORY OF ARCHITECTURE – III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- To inform about the development of Western architecture from 1st century onward and its contextual and ecclesiastical aspects.
- To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion, climate and technology.
- To gain knowledge of the development of architectural form with reference to technology, style and character in western architecture.
- To comprehend and analyze spatial character, scale, and structure through historical and traditional built form.
- To comprehend and relate to the theoretical and philosophical basis of western architecture.

Module-1	Early Christian Architecture	Development of early church from Roman basilica. The concept of center and path of Christianity manifested through centralized and longitudinal church. Interiority of churches and the articulation of interiors to create spiritualized space. Study of different basilica churches in Italy.
Module-2	Byzantine Architecture	Centralization in Byzantine churches. Centrality and interiority of both cross-domed 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 Constantinople
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. Integration of centralized and longitudinal plans. Articulation of external wall like arcaded interiors resulting in dematerialization of exterior. Study of important cathedrals and churches from Italy and France.
Module-4	Gothic Architecture	Continued integration of centralized and longitudinal plans. Spatial and formal integration of Romanesque churches. Integration of wall and vault. Ribbed vault and the dissolution external wall to allow light. Sensitivity to light and use of stained glass for mysterious interiors. Need and development of different external buttressing. Study of important cathedrals and churches in France.
Module-5	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.
Module-6	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-7	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.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial of Module 1 - 7	7	4	28
2	Seminar/Presentation of Module 1 - 7	1	7	7
			TOTAL	35

B. ARCH. SEMESTER – IV
RAR – 408, RESEARCH / SEMINAR / WORKSHOP - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	0	0	0	50	1	-

OBJECTIVES

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

Module-1	Introduction	Styles of Referencing
Module-2	Technical Writing	Referencing Techniques, Bibliography.
Module-3	Book Reviews	Review of book and its presentation

LIST OF ASSIGNMENTS

1. Review of an architectural book/books prescribed by the assigned teacher.
2. Referencing assignments based on the book / topic assigned by the faculty member student is assigned with.
3. 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. 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.

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Tutorial of Module - 1	1	5	5
2	Tutorial of Module - 2	3	5	15
3	Tutorial of Module - 3	1	15	15
			TOTAL	35

B. ARCH. SEMESTER – IV
RAR – 409, VERNACULAR ARCHITECTURE

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	1	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- To highlight the role of Vernacular Architecture & lessons useful in contemporary context
- To expose students to the varied vernacular and traditional architecture of India and the world.
- To connect the aspect of climate responsiveness and environment suitability of vernacular architecture to the ongoing design studio.

Module-1	Introduction to Vernacular	Definitions; Relevance; Role & scope of Vernacular Architecture; issues of concern in present day architecture and causative forces of the vernacular form.
Module-2	Lessons from Vernacular Architecture	Brief overview of the varied learnings from vernacular including Sense of Place, Spontaneity & variation, Control, Open Ended form Relationship, Symbols & Meanings.
Module-3	Case/ Literature Studies	Study of vernacular and traditional architecture of India and the world specifically in varied climatic zones.
Module-4	Study of an existing Settlement	Study of an existing settlement in the vicinity for on – site comprehension of afore-mentioned characteristics and developing a design criterion for the ongoing design exercise.

REFERENCE BOOKS:

1. Architecture of the Indian desert, Kulbushan Jain & Meenakshi Jain, Aadi Centre, Ahmedabad.
2. Encyclopaedia of Vernacular architecture of the World, Cambridge University Press.
3. House, Form & Culture, Amos Rappoport, Prentice Hall Inc, 1969.
4. VISTARA – The architecture of India, Carmen Kagal. Pub: The Festival of India, 1986.
5. Oliver Paul. Built to meet needs. Cultural issues in vernacular architecture. Italy: Routledge 2006.Print.
6. Architecture Without Architects: A Short Introduction to Non-pedigreed Architecture by Bernard Rudofsky
7. Bhatia, Gautam,Laurie Baker, Life, Work, Writings, New Delhi, India,1994 Penguin Books,.ISBN 0-14-015460-4

CRITERIA FOR ASSESSMENT OF SESSIONALS

S.NO.	PARTICULARS	NO. OF ASSIGNMENTS	MARKS PER ASSIGNMENT	TOTAL
1	Drawing Sheets / Presentation of Module - 1	1	5	5
2	Drawing Sheets / Presentation of Module - 2	1	5	5
3	Drawing Sheets / Seminar / Presentation of Module - 3	1	10	10
4	Measure Drawing & Model of Module - 4	1	15	15
			TOTAL	35