

B.ARCH. I (SEM - I) Architectural Design I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-101	Architectural Design I	Architectural Design Studio – 04 Basic Design and Visual Skills – 03	-	7	100	100	200	-	200	400

Emphasis: Developing basic skill of expressions that involve the ability to perceive, abstract and create the design of objects and spaces. Introduction to the principles and elements of 'Design'

Contents: Principles of 2D and 3D composition, human scale, abstractions, sensory stimuli as components of architectural design; Introduction to Architectural Terminology.

Projects: Space making and place making, theme based compositions, volumetric studies, area studies, Literature Review

Basic Design SEM I

Emphasis: Developing visual literacy and basic expressional skills that involve the ability to perceive, abstract and create as a process of the design of objects and spaces.

Contents: Principles of 2D and 3D composition and introduction of basic terminologies related to it, Introduction to the Colour theories, Elements of Composition, Explorations of various materials and medias, developing visual literacy through the process oriented exercises and lateral thinking.

Projects: Compositions of positive and negative, 2D compositions based on geometrical forms and other objects. Design exercises for developing abstract reasoning, model making and volumetric compositions.

References:

1. Ching, Francis D. K. – Form, Space and Order
2. Rasmussen, Stein Eiler – Experiencing Architecture
3. Berger, John – Ways of Seeing
4. Kamiya Takeo – A Guide to the Architecture of the Indian Subcontinent
5. Corbusier, Le – Towards New Architecture
6. Gill, Robert – Rendering with pen and ink
7. --- - Art in everyday life
8. Ruskin, Eugene – Architecture: Scale and proportion
9. Gill, Robert – Basic Rendering
10. Ching, Francis D. K. – Graphics in Architecture
11. De Bono, Edward – Lateral thinking

B.ARCH. I (SEM - I)											
Architectural Graphics Skills I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme	Internal Evaluation				University / External Evaluation		Grand Total
					L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	
	1	2	3	4	5	6	7	8	9	10	11
2	ARC-104	Architectural Graphics Skills I	Manual – 03 Computer – 02	-	5	50	50	100	-	100	200

Emphasis: Developing skills for representation of geometric forms and compositions as a tool of design. Developing skills for using Computer Aided Design Software's as a tool for design representation.

Contents:

Manual

- Familiarization with drawing materials and equipments.
- Construction, use and composition of different types of lines in drawing preparation.
- Lettering and architectural abbreviations
- Basic principles of geometry and its construction.
- Orthographic projections of points, lines, planes and solids.
- Understanding of multi-view drawing system.
- Sections of solids

Computer

- Familiarization with different Computer Aided Design software's, its use in Architectural Representation.
- Application of principles of technical representation and Construction of Different types of lines, shapes, geometry & its compositions through software like AutoCAD.
- Introduction to Software's like PowerPoint, Photoshop, Google Sketch up as useful tool to develop presentation skills.

References:

1. Leaseua, Paul: Graphic Thinking for Architects and Designers
2. Ching, Francis D. K. – Graphics in Architecture
3. Ching Francis D.K. –Design Drawing
4. Rendow Yee- Architectural Drawing
5. Bhatt, N. D. – Engineering Drawing
6. Architectural Drafting & Design-Alan Jefferis & David A. Madsen
7. Software User's Guide

B.ARCH. I (SEM - I)											
Building Materials and Construction Technology I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-102	Building Materials and Construction Technology I	Building Construction – 03 Building Materials and Sciences -01 Workshop and site exposure– 01	3	2	50	50	100	100	-	200

Emphasis: Understanding of basic building materials, basic building components in construction, building systems and related construction technology.

Content:

- Introduction to the various components of building like floors, roofs, openings, staircase etc.
- Study of basic materials of construction such as sand cement lime aggregates; brick stone their structural & physical behaviour with respect to its properties & application in building.
- Study of all the types of masonry in Brick and Stone construction
- Study of brick masonry.
- Understanding the concept of load bearing & framed structures & composite structures
- Study of building components such as foundations, walls, floors, openings etc .in Load bearing & framed structures.
- Forming of opening in various materials for the building types such as lintels arches etc.
- Introduction of basic foundations strip, pad etc

Projects: Study through practical site visits, presentations, case studies & workshop based on the application of theory to construction field.

Reference:

1. Mackey W.L -Building Construction, Vol –I,II,III,
2. Arora S.P. & Bindra S.P. -Building Construction
3. Barry .R - The Construction of Building
4. Cowan Henry J -Handbook of Architectural Technology
5. Allen Edward -Fundamentals of Building Construction

B.ARCH. I (SEM - I)											
Structural Design and Systems I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-103	Structural Design and Systems I		2	-	25	25	50	50	-	100

Emphasis : Forces - Force System - Equilibrium - Resultant

Contents :

- 1. Introduction:**
Introduction Fundamental principles of Engineering Mechanics, Newton's laws of motion, law of parallelogram of forces, principle of transmissibility, concept of rigid body, particle.
- 2. Natural forms :**
Understanding Nature- a creative base for understanding structure, correlation between natural & manmade structure.
- 3. Forces :**
Introduction to types of forces, Static loading, Time dependent loading, Impact loading, Cause & effect of various forces like Dead load, Imposed load, Wind load, Earthquake load, Hydrostatic load, erection force etc on building. Effect of physical form on load transfer i.e. Forces acting through point, distributed forces on line, & area.
- 4. Force systems :**
Free body diagram, Resolution of forces into components, Types of force systems, concurrent, coplanar, nonconcurrent etc. forces in plane & space. Calculation of resultant for coplanar parallel & coplanar concurrent force system, calculation of moment.
- 5. Equilibrium:**
Introduction to Equilibrium, Conditions of equilibrium for the coplanar parallel & coplanar concurrent force system, Types of supports, Determinacy, & Stability, Basic behaviour of elements in load transfer i.e. bending, torsion, shear, tension, compression etc.
- 6. Beam :**
Introduction as a flexural element, simply supported, overhanging & cantilever beams, determinacy, calculation of Reaction at supports for beam, Application.
- 7. Truss :**
Introduction, Types of truss, Analysis of a plane truss. Use of graphical method. Introduction to space truss, Application.

Project :

1. Tutorial based on course contents.
2. Making of models based on- stability & load transfer concept.
3. Creative exercise based on course content.

Reference :

1. Bear & Johnston , " Vector mechanics for engineers- statics"
2. Desai & Mistry, "Engineering Mechanics, statics & Dynamics."
3. Junarkar & H.J. Shah, "Applied Mechanics."
4. Jeffery Cook, "Seeking structure from nature."

B.ARCH. I (SEM - I)											
History of Culture I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-105	History of Culture I	1. History of Human Settlement & Civilization - 03 2. Humanities (Sociology) - 01	4	-	25	25	50	50	-	100

History of Human Settlements, Civilizations and Cultures

Emphasis: Elementary concept of civilization, society, settlements, culture and its articulation in Architecture and built form; Historical context of building forms.

Contents: Growth of civilizations; societal institutions, operational cultural elements, significance of sacred & secular spaces.

Understanding, culture and cultural elements, traits, attributes important theories of society and change, urbanization – its impact on various cultural attributes and on the built form.

A. World History

- Prehistoric shelters – evolutionary stages of man. Early settlements and Settlement patterns
- Egyptian
- Mesopotamian civilization
- Minoan & Mycenaean civilization

B. India

- Indus valley civilization
- Vedic period / Aryanisation of India

References:

1. Kostof, Spiro, History of Architecture : Settings and Ritual , Oxford Press , N.Y. , 1995
2. Childe, Gordon, The Bronze Age, Past and Present, Penguin, 1942 (reprints thereafter)
3. Frankfort, Henri, The Birth of Civilization in the Near East, Williams and Norgate, 1951
4. Casson, Lionel, (ed.), Ancient Egypt, Time Life Books, Amsterdam , 1987
5. Basham , A.L. , The Wonder that was India., Penguin, Delhi, 1992
6. Michell, George, Hindu Art & Architecture, Thames & Hudson, 2007

Humanities - Sociology

Emphasis:

Basic concepts of sociology; Social institutions and their roles; some social theories and perspectives on society

Contents:

- Introduction, Scope and Approaches to Sociology and its models – Evolutionism, Structural Functionalism, Conflict, Symbolic Interactionism
- The Family as a Social Unit
- Religion and Social Perspectives
- Urbanisation as A Social Phenomenon; development of cities, Impact, etc
- Social organizations - Typology, characteristics, structure, approaches like Classical, Determinist, Human Relational
- Theories of Social change like Evolutionism, Diffusionism, Functionalism, Conflict etc
- Social Stratification
- References
- Social processes – C. H. Cooley
- The social construction of reality – Berger and Luckman
- Society and Knowledge – Garden Child
- Mind, Self and Society – Margaret Mead
- Social change- William Ogburn
- Elements of Social Organization – R Firth
- Cities in Evolution – Patrick Geddes

B.ARCH. I (SEM - I)											
Climatology and Environmental Studies											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
6	ARC-106	Climatology and Environmental Studies		2	-	25	25	50	50	-	100

Emphasis

- Environmental issues, ecology and ecosystem.
- Environment design as a domain of architects /designers/planners, with an understanding of anthropogenic activities as the determinants of environmental quality.
- Building activity as synchronous process to immediate climatic context for healthier environments.

Contents

- Env, ecology, ecosystem with cardinal principles, natural cycles
- Resources, causes of resource exhaustion and resource pollution, Urbanization and impacts
- Sun-Earth relationship, Climate and weather, Elements of climate,
- Climatic zones, features of climatic zones, Microclimate
- Principles of thermal design, and means of thermal control
- Noise and noise control, day lighting concept
- Applications in design

Projects:

1. Ecosystem, resources and pollution study of some live example
2. Sun path study with identified locations
3. Study of vernacular architecture

References:

1. Norman Kormandy: Environment and Ecology
2. Koenigsberger et all: Manual of tropical Housing

B.ARCH. I (SEM - I)											
Communication Skills											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
B. Group of Subjects											
7	ARI-107	Communication Skills		2	-	25	25	50	-	50	100

Emphasis:

Development of listening, oral and written skills; Styles and formats of written communication; introduction to alternative media like posters, collages; analyzing texts

Contents:

- Effective communication of ideas
- Formal and Informal styles of writing
- Critical appraisals of media messages, texts
- Preparation of some alternative media materials
- Note taking, summary and précis preparation
- Non verbal/body language in interpersonal communication

References:

1. Heaton, J.B. Language testing, Modern English Publications, 1982
2. Hedge, Tricia. Writing, Oxford University Press, 1988
3. Saraswathi, V. Organised Writing, Orient Longman, 1979
4. Ur, Penny. Teaching Listening Comprehension, Cambridge University Press, 1984
5. Ur, Penny. Discussions that work, Cambridge University Press, 1991
6. Brown, G. and Yule, Effective Communication skills, Cambridge University Press, 1983

B.ARCH. I (SEM - I)											
Elective I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
8	ARE-108	Elective I	1. Traditional & Contemporary Crafts 2. Sculpture & Ceramic Workshop	3	-	25	25	50	-	50	100

1. Traditional & Contemporary Crafts

Emphasis: Introduction to traditional and contemporary crafts.

Contents: There are a myriad of craft traditions in India, which depend on social, economic and regional factors. The present status of craft in India owes much to the rich craft traditions of the past. Most of the crafts from the past continue to flourish due to their utilitarian nature, their availability to the common people and popularity in domestic and foreign markets. The objective of the course is to introduce to the students to the traditional as well as the evolution of contemporary crafts in India.

1. Painting

- Folk Art Paintings - Madhubani Paintings, Warli Paintings, Tribal Paintings, Phad Paintings, Patachitra, etc.
- Miniature Paintings
- Glass Paintings
- Thangaka Paintings
- Batik Paintings

2. Textile

3. Gem & Jewellery
4. Metal, etc.

2. Sculpture & Ceramic Workshop

Emphasis: Introduction to hands-on working on Sculpture and Ceramics for developing skills for handling various materials.

Contents:

1. Introduction of various techniques for handling different materials
2. Sculpture making in various materials
3. Ceramic and Pottery making

General Note:

1. Elective will be offered based on the minimum no. Of students opting for a course and availability of expertise for the subject.
2. The content of the course is suggestive and will be modified as per the requirement and inclination of the group of students.

B.ARCH. I (SEM - II) Architectural Design Studio II											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
1	2	3	4	5	6	7	8	9	10	11	
A. Core Subjects											
1	ARC-201	Architectural Design II	Architectural Design Studio-04 Basic Design and Visual Skills- 03 Theory of Design - 01	-	8	100	100	200	-	200	400

Architectural Design SEM II

Emphasis: Introduction to the fundamentals of architectural design like form, space, scale and proportions, functions and anthropometrics, structure and materials, sensory qualities and developing an understanding of architecture as a process of creating an integrated functional, structural and spatial system.

Contents: Anthropometric studies, human physiology and ergonomics, understanding of interrelationships of functions, Design parameters like spatial order, basic modulation, space-structure-form correlation, principles of abstractions, spatial scales, ordering mechanism, evolution of form.
Design parameters like site context, functional requirements and inter-relationships, environmental conditions, evolution of form based on structural modules. Structure as an ordering mechanism, resolution of built form with functional requirements as a major determinant.

Projects: Part 1
Detailed Study of Anthropometrics, Small scale Space / volume design exercise, Design of small structures and spaces with specific functions, theme based compositions, volumetric studies, area studies, Literature Review.

Part 2
Design of a small space of uni-functional nature e.g. Cafe, Display gallery, etc. With relevant case studies, literature review, models as analytical tools.

Basic Design SEM II

Emphasis: Introduction to the principles design like function and form, scale and proportions, colour and texture, materials and surfaces

Contents: Application of colour theories and cycles, Study of various textures and colours with its inherent expressions and effects, Study of natural forms like leaf, shell, tomato etc., Application of various materials like Clay, Paper Mache, Timber, Steel etc, Application of various graphic techniques and development of abstract reasoning

Projects: Theme based compositions, volumetric studies, Literature Review

Theory of Design

Emphasis: Principles of Design.

B.ARCH. I (SEM - II)											
Architectural Graphics Skills II											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
2	ARC-204	Architectural Graphics Skills II	Manual – 03 Computer – 02	-	5	50	50	100	-	100	200

Emphasis: Developing skills for preparing two dimensional drawing set as a tool to represent the design.
 Developing skills for 3-dimensional visualization of objects/buildings & it's representation on 2-D media.
 Developing model making techniques through principles of solid geometry

Contents: Manual

- Developing skills for reading and perception of Architectural Drawings through study and drafting of ready drawing sets.
- Developing measurement skills through measuring a small unit and preparation of measure drawing set for the same.
- Introduction to rendering techniques and preparation of 2D Presentation drawings.
- Introduction to Inking media.
- 3-D representation of solids through concepts of axonometric projections.
- Surface development of solids and lateral surfaces in sections.
- Use of development of surface technique to create models.

Computer

- Introduction to **Computer Aided Design** Softwares such as Auto CAD useful to prepare 2D technical as well as 3D and presentation drawings.

References:

1. Leaseua, Paul: Graphic Thinking for Architects and Designers
2. Ching, Francis D. K. – Graphics in Architecture
3. Ching Francis D.K. –Design Drawing
4. Rendow Yee- Architectural Drawing
5. Bhatt, N. D. – Engineering Drawing
6. Architectural Drafting & Design-Alan Jefferis & David A. Madsen
7. Software User's Guide

B.ARCH. I (SEM - II)											
Building Materials and Construction Technology II											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-202	Building Materials and Construction Technology II	Building Construction – 03 Building Materials and Science–02 Workshop and site exposure – 01	4	2	50	50	100	100	-	200

Emphasis: Understanding the construction technology involved in building components.

Content:

- Study of basic materials of construction such as wood, metal, glass & plastic etc. their structural & physical behavior with respect to its properties & application in building.
- Types of footings and shallow foundations.
- Walls:
 1. Different types of walls and their Construction details
 2. Various types of wall finishes, like plastering, painting, cladding, jointing, & pointing etc and their applications.
- Staircases:
 1. Types & construction details of staircases in different materials.
- Openings:
 1. Different types of doors, windows, ventilations and skylights in different materials. and their operational and fixing details.
- Types & details of building elements like weather shed, balcony, canopy & pergolas.
- Study the various RCC construction equipment.
- Study of joinery in timber & metal.

Projects: Study through practical site visits, presentations, case studies & workshop based on the application of theory to construction field.

Reference:

1. Mackey W.L -Building Construction, Vol –I,II,III,
2. Arora S.P. & Bindra S.P. -Building Construction
3. Barry .R - The Construction of Building
4. Cowan Henry J -Handbook of Architectural Technology
5. Allen Edward -Fundamentals of Building Construction

B.ARCH. I (SEM - II)											
Structural Design and systems II											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-203	Structural Design and systems II		2	-	25	25	50	50	-	100

Emphasis : Simple Stress – strain, Shear force & Bending moment diagram

Contents : 1. Simple stresses & strain :

Introduction, behaviour of material under loading, stress & strain due to axial force, Hook’s law, working stress, Ultimate stress, factor of safety, permissible stress, lateral strain,.

2. Shear force & Bending moment diagram for Determinate Beams :

Introduction to shear force, bending, calculation of Shear force & bending moment for beams subjected to various types of load combination i.e. point load, distributed load with various support condition like simply supported, overhanging, Cantilever etc. Relationship between bending moment & shear force diagram, Determination of point of contra flexure, Application of Shear force & bending moment diagram.

3. Shear force & Bending moment diagram for Determinate & indeterminate Plane Frame & Arches :

Behaviour of Statically determinate & Indeterminate plane frames subjected to gravity & lateral load. Basic understanding of shear force & bending moment diagram for the same. Behaviour of three hinges & two hinge Arch under point load & uniformly distributed force. Understanding of Bending moment diagram for Arches.

4. Distributed forces :

Determination of Centroid, Calculation of Centre of gravity for line & area element, calculation of Moment of inertia of area element, use of parallel axis theorem.

Project : Tutorial based on course contents.

Reference :

1. Junarkar & H.J. Shah, “Mechanics of structures, vol – I & II.”
2. E.P. Popov, “Mechanics of materials.”
3. R.K. Bansal, “A text book of strength of materials.”
4. R.S. Khurmi, “Strength of materials.”
5. S. Ramamrutham, “Strength of materials.”
6. Desai & Mistry, “Engineering Mechanics, statics & Dynamics.”

B.ARCH. I (SEM - II) History of Culture – II											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-205	History of Culture – II	1. History of Human Settlement & Civilization - 02 2. Humanities (Psychology) - 01	3	-	25	25	50	50	-	100

Emphasis: Study of society, its historical, socio–institutional developments, settlements, public and private spaces, symbols and meaning in built form and spatial structures.

Contents:

A. World History:

- Rise and decline of Greek city - states.
- Republican Rome & Roman Empire
- Chinese Civilization - Early and medieval periods
- Japanese civilization and traditions
- Civilizations of South America.- Inca & Aztec states

B. Indian History:

1. Mauryan Period.

- C. Religion and its articulation in architecture and sacred building forms with special emphasis on Buddhism & Hinduism.**

References:

1. Stierlin, Henri, Greece : From Mycenae to The Parthenon, Taschen , 1997
2. Stierlin, Henri, Roman Empire Vol - 1, Benedikt Taschen Verlag GmbH, 1996
3. Marco, Bussagli, Rome: Art & Architecture , Konemann, 1999
4. Henderson, John, The World of Arcient Maya, 1981
5. Bethell, Leslie,(ed.), Cambridge History of Latin America Vol-1, 1984
6. Tomory, Edith, History of Fine Arts in India & the West, Orient Longman, 2004
7. Tadgell, Christopher, The History of Architecture in India, Phaidon Press, 1990.
8. Thapar, Romila, A History of India Vol. 1, Penguin Books, 1990

Psychology

Emphasis:

1. To introduce students to elementary & basic concepts in psychology.
2. To help develop an interest in understanding societal attitudes to art, architectural forms.
3. To familiarize students with current theories of social behavior.

Contents:

- Conceptual approaches, Scope & Methods of psychology.
- Perception, Perceptual constancies and Awareness
- Personality, types and its Assessment
- Human Motivation & Emotion
- Conflict, Adjustment and Mental health
- Attitude, Aptitude & Intelligence

References:

- Allport, F.H., Social Psychology , Houghton Mifflin, 1992
- Carterette, E.C., and Friedman, M.P. (eds) Handbook of Perception , Academic Press, 1974
- Hilgard, Ernest, and Atkinson, Richard, Introduction to Psychology, Oxford & IBH , 1975

B.ARCH. I (SEM - II) Surveying & Leveling											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
6	ARC-206	Surveying & Leveling		2	-	25	25	50	50	-	100

Surveying and Leveling

Emphasis: Understanding of various methods of surveying & introduction to property documents.

Contents:

1. Introduction of subject, basic terms, definition and terminologies. Classification and Division of survey, units of measurements.
2. **Chain Surveying:**
Linear measurement, principle of chain surveying, frame work, instruments used, field work.
3. **Compass Survey:**
Introduction to traversing, principle used, types of meridian, WCB & RB system.
4. **Plane Table Survey :**
Underlying principle, orientation techniques, Instruments used in plane table surveying, radiation, intersection, traversing & resection methods, plotting in field.
5. **Methods of Area Measurements:**
Introduction to various methods of measuring area between chain line & boundary, calculation of area using trapezoidal & Simpson's formula, use of plannimeter to calculate area. Other approximate methods.
6. **Introduction to Leveling & Contour:**
Introduction to leveling & RL, How to get the RL.
Understanding of contours, basic characteristics & uses of contour, study of contour map- identification of ridge line, valley line, etc. Calculation of volume for cutting & filling using contour map.
7. **Introduction to Total station:**
Introduction to the instrument & working methodology.
8. **Setting out of Building :**
Setting out of building on the ground- Methods for setting out buildings by horizontal and vertical control.
9. **Introduction to GIS :**
Introduction to various terminology & reading of map.
10. **Introduction to property documents :**

Introduction to various property documents like 7/12, 8/A, 6/A, city survey plan, Land records, TP plan- FP no & RS no. etc.

Project:

Field Work:

1. Plotting of building, boundary and other physical details like trees, pole etc. by chain survey, compass survey, plain table survey.
2. Area measurement by planimeter & other methods.
3. Study of contour map and earth work calculation.
4. Site visit for setting out building on ground.
5. Study of property documents.

Reference:

1. "Surveying- 1", Dr. B. C. Punamia
2. "Surveying" , Kanetkar and Kulkarni
3. "Surveying"- Arora.

B.ARCH. I (SEM - II)											
Photography											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
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B. Group of Subjects											
7	ARI-207	Photography		2	-	25	25	50	-	50	100

Emphasis

- To create understanding and scope of professional use of photography techniques explore the potential application in field of architecture
- Use of different media and techniques as tools to develop visual and perceptual skills to develop observation and representation through camera.

Contents

- Introduction to various types of cameras, lenses, filters and equipments
- Use and importance of shutter speed, aperture, field of depth
- Importance of framing composition and frames of reference
- Various types of photography such as nature, architecture, product, object, model, interior, urban, landscape etc
- Presentation and display of the photographs, printing and developing
- Use of computer tools, software for photographic presentation

Projects

On-site photography of an object, material, space, building, landscape, to understand the above theory.

References

- Adrian Holloway (1981) The Handbook of Photographic equipment and techniques. Pan Macmillan
- Amphoto (1980) Photo topics and techniques. Eastman Kodak Company
- Beaumont and Nancy Newhall (1958) Masters of Photography. New York, George Braziller Inc
- Joseph W Molitor (1976) Architectural Photography. John Wiley and Sons Inc.
- Julian Calden and John Garrett (1999) The 35 mm Photograph Handbook. Pan Books

B.ARCH. I (SEM - II)											
Elective I											
Sr. no.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
8	ARE-208	Elective - II	1. Communication Skills 2. Performing Arts	2	-	25	25	50	-	50	100

Communication Skills

Emphasis: This elective aims to equip students with communication skills based on modern communicative methods. Situational practice will be given. A combination of faculty lectures, situational practice, student presentations will comprise class activities.

Contents:

- Technical Communication and General Communication.
Verbal and non-verbal communication (kinesics). Components of Non-verbal Communication, Barriers to effective communication, (Noise in oral and written communication) Communication across cultures.
- Effective presentation strategies.
Defining purpose, analysis of audience and locate, organizing contents. Preparing an outline of the presentation. Visual aids, nuances of delivery, Body language and effective presentation.
- Interviews
Introduction, General preparations for an interview, Types of questions generally asked at the interviews. Types of interviews, Importance of nonverbal aspects.
- Group Discussions
Introduction, Group discussions as a part of the selection process, guidelines for group discussion. Role functions in group discussion.
- Paragraph Development,
Introduction, Topic sentence and supporting sentences. Attributes of a good paragraph. Types of paragraphs.
- Effective Reading Skills
Purpose of reading, skimming and scanning. Tips for improving comprehension skills.
- Grammar and Vocabulary
Tense and the concept of Time. Passive Voice, Conditionals Prepositions, Concord. Idioms, Confusables, one-word substitutes, homonyms, homophones

REFERENCES:

- Krishna Mohan and Meera Banerji, “Developing Communication skills”, Mc.Millan Co., Publication. 1990
- N. Krishnaswami and T. Sriram, “creative English for Communication”, Mc.Millan Co., Publication. 1992.
- Meenakshi Raman and Sangeeta Sharma, Technical Communication; Principles and Practice, Oxford University Press.

Performing Arts

Emphasis: To develop a perceptive, sensitive and critical response to music, dance and drama in its historical and cultural context.

Contents:

1. Introduction to various forms of performing arts.
2. Relation of performing arts and space definition

Note:

1. Elective will be offered based on the minimum no. Of students opting for a course and availability of expertise for the subject.
2. The content of the course is suggestive and will be modified as per the requirement and inclination of the group of students.

B.ARCH. II (SEM -III) Architectural Design III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total (8+9+10)
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-301	Architectural Design III	Architectural Design Studio – 04 Basic Design and Visual Skills –02 Theory of Design – 02	-	8	100	100	200	-	200	400

Architectural Design III

Emphasis: Evolving an appropriate design for specific users and context

Contents: Program formulation on the basis of functional needs and users' requirements, understating site context, environmental conditions, social life and cultural values as determinants of architectural design, developing conceptual positions based on the interpretations of the program, developing systems of construction and material details relevant to the conceptual positions, development of functional and aesthetical construction details and fenestration design

Projects: Design of a dwelling unit based in a specific context, relevant case studies and their analysis, area volume diagrams, literature review, exercises and time problem to develop innovative thinking, exercises related to relevant or appropriate construction details and materials

Basic Design III

Emphasis: Learning observation, analysis and abstraction skills. Learning complex structures in nature. Understanding space making elements, volumetric explorations.

Content: Study of natural form, learning abstraction and interpretation. Study of spatial planning.

Projects: Analysis of natural and manmade forms. Learning geometry, proportion and function. Study of solid-void, light-texture and enclosure-openings.

Theory of Design

Content: Exploration and expression of ideas through increased awareness and acquisition of visual

Vocabulary,

Brief descriptions of the elements of design, such as line, shape, space, texture, value and color, as well as describing the principles of design like movement, emphasis, balance, unity etc.

Looking at historical masterpieces of architecture, and learning through the analysis of the underlying principles.

References:

1. Lieklider, Health – Architectural space
2. Analysis of the Precedents
3. Todd, Kim – Site, Space and Structure
4. Miers , Pierr Von – Elements of Architecture from form to place

5. Blaser, Werner – Tadao Ando: Architecture of silence

B.ARCH. II (SEM -III)											
Architectural Graphics Skill III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
2	ARC-304	Architectural Graphics Skills III	Manual – 02 Computer – 02 Computer Appl. in Architecture - 02	-	6	50	50	100	-	100	200

Emphasis: Developing skills for 3-dimensional visualization of objects/buildings & it's representation on 2-D media.

Contents: **Manual**

- Interpenetration of geometric solids and conditions of intersections.
- Perspective projections – use of one point and two point perspective for 3-D representation.
- Use of Sciagraphy – methods to represent shade/shadow and depth of an object with reference to sun movements.

Computer

- Introduction 3-D representation software like 3-D Studio Max

Computer Application in Architecture

- Introduction to graphical soft ware like Coral Draw

References:

1. Leaseua, Paul: Graphic Thinking for Architects and Designers
2. Ching, Francis D. K. – Graphics in Architecture
3. Ching Francis D.K. –Design Drawing
4. Rendow Yee- Architectural Drawing
5. Bhatt, N. D. – Engineering Drawing
6. Architectural Drafting & Design-Alan Jefferis & David A. Madsen
7. Software User's Guide

B.ARCH. II (SEM -III)											
Building Material And Construction Technology III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-302	Building Materials and Construction Technology III	Building Construction – 02 Building Materials and Sciences – 02	3	1	50	50	100	100	-	200

Emphasis: Understanding the construction technology involved in building components.

Content:

- Introduction to R.C.C as material , their structural & physical behaviour with respect to its properties & application in building
- Roofs:
 - Introduction to basic types of roofs such as flat, pitched and curved.
 - Basic understanding of flat roofs and its coverings.
 - Construction details & materials involved in various types of pitched roof system.
 - Types of roof coverings and their application.
 - Basic understanding of curved roof structures.
- Floors:
 - Construction details & materials (timber & R.C.C) involved in various types of floors
 - Different floor finishes and their application.
- Study of various construction equipments and formwork relevant to the components.

Projects: Study through practical site visits, presentations, case studies & workshop based on the application of theory to construction field.

Reference:

1. Mackey W.L -Building Construction, Vol –I,II,III,
2. Arora S.P. & Bindra S.P. -Building Construction
3. Barry .R - The Construction of Building
4. Cowan Henry J -Handbook of Architectural Technology
5. Allen Edward -Fundamentals of Building Construction
6. Roof construction Manual

B.ARCH. II (SEM -III)											
Structural Design and systems III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-303	Structural Design and systems III		3	-	25	25	50	50	-	100

Emphasis : **Analysis of Structures.**

- Contents** :
- 1. Bending stress :**
Theory of simple bending, Assumptions, calculation of bending stresses for simply supported beams & cantilever beam of various cross sections., beams of uniform strength.
 - 2. Shear stress :**
Calculation of shear stress for simply supported & cantilever beams of various cross sections like T, L, I, O, Rectangle, Hollow sections etc.
 - 3. Direct & Bending stress :**
Combined direct & bending stresses, eccentric loading, middle third rule, Core & kernel, application,
 - 4. Analysis of Column :**
Theory of column under axial loading, behaviour of column, Slenderness ratio, short, medium & long column, buckling of column, effective length, Calculation of load carrying capacity using Euler's & Rankine's formulae.
 - 5. Shear force & Bending moment diagram for Indeterminate Beams :**
Calculation of Shear force & bending moment for Fixed & Continuous beams using **Moment distribution method**. Drawing Shear force & bending moment diagrams, Interpretation of diagram & application.
 - 6. Deflection of Beams:**
Introduction to deflection, boundary condition, Deflection of beams for simple cases like simply supported & cantilevers with full uniformly distributed load & central point load.

Project : 1. Tutorial based on course contents.

- Reference** :
1. Junarkar & H.J. Shah, "Mechanics of structures , vol – I & II."
 2. E.P. Popov, "Mechanics of materials."
 3. R.K. Bansal, "A text book of strength of materials."
 4. R.S. Khurmi, "Strength of materials."
 5. S. Ramamrutham, "Strength of materials."
 6. B.C.Punamia, "Analysis of structure."

B.ARCH. II (SEM-III) History of Culture – III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-305	History of Culture – III	1. History of Human Settlement, Civilizations & Cultures.	3	-	25	25	50	50	-	100

History of Human Settlements, Civilizations and Cultures

Emphasis: Study of social, political and religious orders; articulation in built forms, socio-cultural milieu, development of thought and philosophy; introduction to art movements.

Contents:

A. World History:

- Medieval Period in Europe.
- Rise and Spread of Renaissance.
- Industrialization / imperialism and resultant upheavals in society and culture.
- Philosophies of Enlightenment thinkers, Romantics, modernists.

B. Indian History:

- Gupta Period.
- Delhi Sultanate.
- Mughal period
- Religion and its articulation in architecture and sacred building forms with special emphasis on Christianity and Islam

C. Introduction to Movement / Genres in Art.

- Italian High Renaissance.
- Baroque – Spain, Flanders.
- Rococo.
- Impressionism
- Cubism.
- Modernism

References:

1. Dunan, Marcel, (ed.), Larouse Encyclopedia of Ancient and Medieval History, Hamlyn, 1966
2. Robinson, D.M., Domestic and Public Architecture of Italy, Baltimore, 1998
3. Hamerow, T. , The Birth of a New Europe : State and Society in the 19th century, Chapel Hill & London, 1983
4. Habib, Muhammad, A Comprehensive History of India, Vol 5, Part I
5. Richards, J.F. , The Mughal Empire - The New Cambridge History of India, Vol.1.5, 1993
6. Gowing, Sir Lawrence, A History of Art, Grange Books, 2002

B.ARCH. II (SEM -III) History of Architecture - I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
6	ARC-306	History of Architecture - I		2	-	25	25	50	50	-	100

Emphasis: Evolution of the built environment or human habitat as a complex and multilayered synthesis of ‘culture, climate and construction’.

Contents: Study of spatial order, structure and materials, articulations, symbols and meanings in the built forms at various scales of settlements, institutions and dwellings in the following time period:

Since the beginning of the civilization to 3rd Century AD

Introduction to history of Architecture

- What is History? What is History of Architecture?
- Introduction to terminologies – folk, tradition, classical, vernacular etc.
- Introduction to different elements of space making – Evolution, Attributes, spatial roles, Applications in various existing buildings.

Introduction to Vernacular Architecture as timeless ways of building

- Shelter as a human need
- Components of Vernacular
- Synthesis of Culture, Climate, Construction – House Form & Culture.

Ancient civilizations

- Indus Valley & Vedic settlements
- Mesopotamian, Egyptian etc.

Major Architectural traditions in the West till the 3rd Century AD

- Greek Architecture
- Roman Architecture

Projects: Drawings, Model making, Literature reviews, Assignments,

References:

- A History of Architecture – Sir Banister Fletcher
- A History of Architecture – David Watkin
- Early India: From the origins to AD 1300 – Romila Thapar
- House form and Culture – Amos Rapoport
- Ascent of Man – Bronowski
- Architecture without Architects: Short intro. to non-pedigreed arch.-Bernard Rudofsky
- Living Architecture Series – Architecture of world: Mayan, Egypt, Greece, Roman
- Elements of space making – Yatin Pandya

- Graphic History of Architecture. – John Mansbridge

B.ARCH. II (SEM -III)											
Building Services & Equipments I											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
7	ARC-307	Building Services & Equipments I		2	-	25	25	50	50	-	100

Emphasis Introduction to all basic Building Electrification design, services and related appliances.

Contents:

- Light and its sources, the visual field, day lighting and its types, day lighting criteria
- Artificial lighting, kind of lighting, illumination, calculations for lighting levels
- Types of electricity, terminology, lighting accessories, protective devices
- Electric power supply system from generation to customer, single phase, three phase, and electrical distribution in a building from main distribution board to switch board.
- Lighting design of a residence

Projects:

1. On site studies
2. Market surveys of different electrical cables and fixtures, electrical accessories.

References:

1. Time saver standards for architectural design data by Calacandar
2. Heating cooling, lighting by Norbert Lechner
3. Electrical wiring estimating and costing-Uppal

B.ARCH. II (SEM -III) Elective -III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
8	ARE-308	Elective - III	1. History of Arts & literature 2. Advanced Graphics	2	-	25	25	50	-	50	100

1. History of Art & Literature

Emphasis: This elective aims at helping to understand progressive development of art forms including literary Works across time and space.

It seeks in a limited way to familiarise students with contribution of great masters. The effort is to show how various works in European and Asian Art were shaped by the dynamics of a number of forces – individuals, economic, social, and political and cross cultural influences.

Contents:

Art History: An introduction, its methodologies and schools

Medieval Art

Renaissance

Post Renaissance

Pre Modern

Modern

Islamic and Indian Art.

The course will be conducted using a mix of faculty presentations, library work, student presentations, and film screenings

2. Advanced Graphics

Emphasis: Develop visual esthetics and style.

Content: Introduction to fundamentals of Graphic Design. Developing basic visual problem-solving and conceptual development skills and awareness.

Projects: working with various mediums to express simple concepts in graphical form. Analyzing presentation techniques of master architects and incorporating them in design.

B.ARCH. II (SEM-IV) Architectural Design IV											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
1	2	3	4	5	6	7	8	9	10	11	
A. Core Subjects											
1	ARC-401	Architectural Design IV	Architectural Design Studio – 06 Basic Design and Visual Skills-02 Building Bye laws & Codes of Practice -02	-	10	100	100	200	-	200	400

Architectural Design IV

Emphasis: Determinants of space making on housing or house forms in rural and urban context and their relevance

Contents: Identification of the cultural factors of space making such as notion of privacy and territoriality, family structure and hierarchy, gender roles, occupational associations, traditional values and their continuity etc., interpretations of socio-cultural factors in the built form in terms of spatial organization, orientation, open, semi open and closed spaces correlation, scales and proportions etc., climate and topography, local construction system and use of materials, bye laws

Projects: Design of various typologies such as dwelling-cluster and neighborhood in a specific community and context, relevant case studies and their analysis, literature review, exercises related to relevant or appropriate construction systems and materials

Basic Design IV

Emphasis: Learning application of basic principles in architecture and other visual practices.

Contents: Study of a building, graphics, painting or a movie to derive understanding of principles applied.

Projects: Analytical study of the sculptural building forms and its critical appraisal of visual character. Analysis of other visual forms.

Building Bye laws and Codes of practice

Emphasis: Develop understanding of building bye laws and its implementation in reference to building design.

Contents:

- Zoning of areas: residential, institutional, industrial agricultural entertainment etc
- Introduction to city, town and village bye laws,
- Evolution of GDCR (Mumbai municipal act, town planning act and GDCR)
- Need of bye laws
- Other prevailing laws (environment law etc)

References:

1. Rapoport, Amos: House Form and Culture
2. Rudofsky, Bernard: Architecture without Architects
3. Oliver, Paul: EVAW
4. Joglekar, M. N.: Contemporary Architecture in India
5. Mc Camant & Durrett: Co-housing
6. Bhatia, Gautam: Life, works and writings of Laurie Baker
7. GDCR

B.ARCH. II (SEM -IV) Architectural Graphics Skills IV											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
2	ARC-404	Architectural Graphics Skills IV	Manual – 02 Computer – 03	-	5	50	50	100	-	100	200

Emphasis: Integrating use of all representation skills to prepare a complete set of drawing for the purpose of interpretation and execution.

Contents:

Manual

- Reading, perceiving and drafting of ready drawing set for the purpose of execution.
- Preparing 3-D perspective drawings for the same.

Computer

- Introduction to advanced presentation software like Revit

References:

1. Leaseua, Paul: Graphic Thinking for Architects and Designers
2. Ching, Francis D. K. – Graphics in Architecture
3. Ching Francis D.K. –Design Drawing
4. Rendow Yee- Architectural Drawing
5. Bhatt, N. D. – Engineering Drawing
6. Architectural Drafting & Design-Alan Jefferis & David A. Madsen
7. Software User’s Guide

B.ARCH. II (SEM -IV)											
Building Materials and Construction Technology IV											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-402	Building Materials and Construction Technology IV	Building Construction – 03	2	1	50	50	100	100	-	200

Emphasis: Soil property and specialized foundations.

Content:

1. Soil investigation, its properties & its application to foundation design.
2. Study of specialized deep foundation including raft, piles ,caissons & cofferdams
3. Study of retaining walls.
4. Study of Shoring, shuttering, scaffolding & underpinning.
5. In depth study of construction stages and application of technology as a whole for any building.
6. Detail Study of supporting temporary structure & stages.

Projects: Study through practical site visits, presentations, case studies & workshop based on the application of theory to construction field.

Reference:

1. Mackey W.L -Building Construction, Vol –I,II,III,
2. Arora S.P. & Bindra S.P. -Building Construction
3. Barry .R - The Construction of Building
4. Cowan Henry J -Handbook of Architectural Technology
5. Allen Edward -Fundamentals of Building Construction

B.ARCH. II (SEM -IV)											
Structural Design and systems IV											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-403	Structural Design and systems IV		3	-	25	25	50	50	-	100

Emphasis : **Analysis & Design of R.C.C. elements & Load bearing Structures.**

Contents : **1. Introduction to IS code :**

Introduction to various load & load combinations, Use of IS code for loads, Introduction to 456-2000 for design of RCC element

2. Methods of design:

Introduction to limit state, working stress & ultimate state methods of design, Determination of Moment of resistance of homogeneous beams of rectangular, under reinforced, over reinforced & balanced sections by limit state method.

3. Analysis & design of Singly reinforced sections using Limit state method:

Analysis & design of singly reinforced sections of beams, Design criteria for deflection, shear, development length & anchor length.

4. Design of Slabs :

Design of slabs spanning in one & two direction. Introduction – Behaviour & detailing of Cantilever slab, continuous slab, Continuous beam & waist slab.

5. Load bearing structure subjected to gravity & seismic load :

Introduction to load bearing structure, understanding of various parameters like material, size, slenderness ratio, effective height & length, opening etc. & its impact on the strength & stability of load bearing structure. Use of nomogrammes to find the thickness of load bearing wall. Calculation of thickness of wall of simple case. Behaviour of wall, column, Arches & Buttresses. Behaviour of load bearing structure under the earthquake. Designing & detailing of brick masonry structure for earthquake.

Project : **1.** Design of various elements with drawing based on course content.

2. site visits

3. Study of structural grid- case study/ Design for locating position of beam, column. Understanding of supporting various elements- slabs, beams & columns as per architectural drawing.

4. Case study of load bearing structure.

Reference :

1. H.J.shah, “ Reinforced concrete, Vol- I.”

2. S. ramamrutham & S. Narayan, “ Design of reinforced concrete structures.”

3. Sushil Kumar, “Treasure of R.C.C. Design.”

4. Shah & kale, “ R.C.C. Theory & design.”

5. IS 456-2000, “ design of RCC elements.”

6. IS 875 –1987, Part I to V.

7. IS 13828-1993, “ Improving E.Q. resistance of low strength Masonry building- Guidelines.”

8. IS 13827-1993, “ Improving E.Q. resistance of earthen buildings, Guidelines.”

9. National Building code of India.

B.ARCH. II (SEM -IV) History of Architecture - II											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-405	History of Architecture - II		3	-	25	25	50	50	-	100

Emphasis: Evolution of the built environment or human habitat as a complex and multilayered synthesis of ‘culture, climate and construction’

Contents: Study of spatial order, structure and materials, articulations, symbols and meanings in the built forms at various scales of settlements, institutions and dwellings in the following time period:

3rd to 13th Century AD

India

- Hindu/ Jain Temple Architecture
- Architecture of Palaces/ Forts

West

- Byzantine
- Romanesque
- Gothic

Others

- Buddhist Architecture

Projects: Drawings, Model making, Literature reviews, Assignments, Debates

References:

- Meaning in Western Architecture – Christian Norberg-Schulz
- A History of Architecture – Sir Banister Fletcher
- Architecture Through the Ages – Talbot Hamlin
- Architecture : From Prehistory to Post-Modernity – Trachtenberg and Hyman
- Early India: From the origins to AD 1300 – Romila Thapar
- **The Hindu Temple (Vol 01 and 02) - Stella Kramrisch**
- **Hindu Architecture – Henri Sterlin**
- **Indian Architecture – Adam Hardy**
- The History of Architecture in India - Christopher Tadgell
- Indian Architecture (Hindu and Buddhist) - Percy Brown
- Living Architecture Series – Architecture of the World: Hindu India, Romanesque, Gothic
- Graphic History of Architecture. – John Mansbridge

B.ARCH. II (SEM -IV)											
Building Services & Equipments II											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
6	ARC-406	Building Services & Equipments II		2	-	25	25	50	50	-	100

Emphasis Introduction to all basic building services with regards to Water supply, Sanitation, and storm water drainage

1. Water Supply:

- Sources of water, Water treatment techniques,
- Requirements of water supply to different types of buildings,
- modes and methods of conveyance of water, fixtures and appurtenances, distribution of water, methods of distribution, different distribution systems and their principles of layout,
- design of municipal water distribution systems and at the project level distribution system, underground and overhead water tanks.
- Brief description of rainwater harvesting and water table recharging techniques.

2. Sanitation and Drainage:

- Refuse, different form of refuse: garbage/solid waste, sullage, toilet waste, storm water, their collection and disposal systems. General principles of drainage.
- Drainage layout for building premises, kitchen, utility and toilet layouts, fixtures and fittings; W.C. flushing valves, flushing tanks, wash basins, bathing accessories.
- Types of traps: floor traps. Gully traps etc; manholes, grease chambers, curb inlets and gutter inlets, inspection chambers, intercepting traps.
- Ventilation of drains and sewers, principles of design of sewer lines, longitudinal sections of drains.
- Drainage in non municipal areas, soak wells, septic tanks
- Rain water drainage pipes, spouts, sizing of rain water pipes, storm water drainage system.
- Sustainable techniques in storm water disposal planning: at the project level, at the city level
- Eco friendly Sewage treatment techniques: biogas plants, sewage treatment methods
- Specialized water supply and drainage requirements: swimming pools, basement level supply and disposal, terrace gardens supply and drainage etc.

Projects:

1. On site studies
2. Market surveys of different water supply and drainage pipes, fittings and fixtures.

B.ARCH. II (SEM-IV)											
Interior Design											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University / External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
B. Group Of Subjects											
7	ARI-407	Interior Design		2	-	25	25	50		50	100

Emphasis

- Effect of Built spaces on human psyche; visual aspects, visual control, visual art appreciation.
- To bring out creativity, imagination, originality and innovations in design.

Contents

- Understanding the need of Interior design. The relationship between Interior design and Architecture. The effect of interior spaces: its quality, characters and classification. Historical background and international perspective. Various art movements and isms that have affected design.
- Understanding the client brief and formulating the program and requirements
- Elements of Interior space. The various planes defining the space like the floor, ceiling, walls, partitions, etc. Enveloping space, contained space and residual spaces? Space within space, furniture, fittings, color, texture, lighting, services, accessories, etc.
- Colours in interiors; hue, chroma and tonal values. Effect of light on colour, various colour schemes like monochromatic, complementary, triadic etc. Colour symbolism
- Lighting in interiors; natural and artificial light, quality and quantity of light, types of light fittings and commercial availability, lighting and function.
- Interior climate; orientation and location of activities, study of comfort conditions, heating, cooling, direct and indirect lighting, location, types, quality of lighting
- Interior landscaping; Plant species, specification, etc. texture, height grouping and layout.
- Study of various types of interior design materials available in the market like wood, plywood, laminate, veneer, glass, steel, aluminum etc.

Projects

- Preparation of sample booklets of materials, furniture, fittings, etc.
- Interior design of a small space with presentation of design scheme, details and specification for the materials and technology used, etc.

References

- Kasu Ahmed "Interior Design" IQUARE publications Pvt. Ltd.
- Joseph De Chiara, Julius Panero, Martin Zelnik (1995) Time-saver Standards for Interior Design and Space Planning. Mc Graw Hill International
- Stephen Calloway (1994) The elements of style-An encyclopedia of domestic architectural details. London, Reed consumer Books Ltd.

B.ARCH. II (SEM -IV)											
Elective -IV											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
8	ARE-408	Elective -IV	1. Sustainable Architecture (PSA) 2. Traditional Architecture	2	-	25	25	50	-	50	100

Sustainable Architecture (PSA)

Emphasis: Developing an understanding regarding the importance and impact of sustainable architecture in present context. Passive Solar Architecture as an important method of achieving Sustainable Architecture.

Contents:

1. Introduction to the term Sustainable Architecture and its importance
2. Resource conservation and optimization, Role of Designer in achieving Sustainability
3. Passive Solar Architecture
 - a. Introduction to Solar Passive Architecture
 - b. Simple Techniques in Passive Solar Architecture
 - c. Advanced Techniques in Solar Passive Architecture
 - i. Passive Heating Techniques
 - ii. Passive Cooling Techniques
 - d. Application of Passive Solar Techniques in Different Climatic Zones

Exercise:

1. Study of Traditional / Vernacular House form.
2. Live Case-Study or literature study of a Well Designed Building having various sustainable architecture features.

References: Manual on Solar Passive Architecture, *Energy Systems Engineering, IIT Bombay, Mumbai & Solar Energy Centre, Ministry of Non-Conventional Energy Sources Government of India, New Delhi. (1999)*

Traditional Architecture

Emphasis: Study & overview the influence of cultural system & ethos in the evolution & development of traditional architecture of a place & region

Content: Introduction to vernacular & traditional architecture. To understand & identify the constants of a traditional building environment in today's multi cultural society. Study of cultural connotation & other determinants of traditional built form as, climate, site, building material & technology along with behavioral studies. Understanding the domestic architecture of a place & various typology of built form in a traditional settlement

Reference:

- i. Oliver Paul: Encyclopedia of vernacular architecture , Vol I,II,III
- ii. Rapoport Amos: House form & culture
- iii. Criticism in Architecture
- iv. Jain Kulbhushan: Thematic Spaces
- v. Jain Kulbhushan & Jain Minakshi: Mud Architecture of Indian Desert,

- vi. Jain Kulbhushan & Jain Minakshi: Indian City in the Arid West
- vii. Rudofsky Bernard: Architecture without Architects.

B.ARCH. III (SEM -V) Architectural Design V											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-501	Architectural Design V	Working Drawing	-	6	125	125	250	-	250	500

Emphasis: Architectural working drawing as tool to communicate and execute architectural design, construction details with the relevant specifications

Contents: Developing a set of working drawings for the purpose of execution and construction, architectural detailing of building components, details and function of building services like electrical, plumbing and drainage, back and forth design processes, exposure to materials, products and assembly, methods of specifications writings in the drawings

Projects: Preparing the complete set of working drawings of an independent design projects from the previous semesters

References:

1. Architects working details – Vol. 1 to 5
2. Macay, W. B. – Building construction Vol. 1 to 4
3. Stitt – Architects detail library
4. Handisyde, Cicil – Everyday details
5. Styles, Keith – Working drawing hand book
6. Woodbridge, Joseph – Details: the architects’ art

B.ARCH. III (SEM -V)											
Building Materials and Construction Technology V											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
2	ARC-502	Building Materials and Construction Technology V	Building Construction – 03	2	1	50	50	100	100	-	200

Emphasis: Understanding of specialized construction system

Content:

- Understanding of Precast and Prestressed concrete components and their applications in building /construction industry.
- Materials and Construction Technology for large span structures(Temporary/Permanent):
 - Modular unit system
 - Space frame system
 - Tensile structures
 - Shell structures

Projects: Study through practical site visits, presentations, case studies & workshop based on the application of theory to construction field.

Reference:

1. W.B. Mackey , “ Building Construction” Vol –I,II,III,
2. S.P. Arora & S.P. Bindra, “ Building Construction”
3. R. Barry, “The Construction of Building”
4. Henry J. Cowan, “Handbook of Architectural Technology”
5. Edward Allen, “Fundamentals of Building Construction”
6. Huntington , “ Building Construction”

B.ARCH. III (SEM -V) Structural Design and systems V											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-503	Structural Design and systems V		3	-	25	25	50	50	-	100

Emphasis : Introduction to steel as an Design element.

Contents : 1. Introduction to IS code :

Introduction to IS -800 for steel structure.

2. Rolled Steel sections :

Study of IS Rolled steel sections & steel table.

3. Design of a simple roof truss :

- Steel trusses, its types, geometry, spans, pitches, spacing etc.
- Various loads on a roof truss. i.e. Dead, Imposed & Live
- Analysis & Calculation of Dead load, Live load & wind Load
- Analysis of a truss under various loads and Design of a truss members

4. Members subjected to axial Tensile load :

Analysis and Design of a regular & built up steel sections subjected to an axial tensile load

5. Members subjected to axial Compressive load :

- Analysis and Design of a regular & built up steel sections subjected to an axial compressive load.
- Design of regular and built up steel columns.
- Lacings & battening of built up columns.

6. Members subjected to transverse load:

Analysis and Design of steel regular & built up sections subjected to bending i.e. beams including analysis and checks for deflection and shear.

7. Design of Footing :

- Analysis & Design & detailing of slab based footing.
- Study of behaviour & detailing of Gusseted based footings.

Project : 1. Analysis & design of a simple elements with detailing based on course content.

2. Site visits & case studies of steel structure.

Reference :

1. L.S.Negi, "Design of steel structure."
2. A.S. Arya & J.L. Ajamani, "Design of steel structure."
3. Kazmi & Jindal, "Design of steel structure."
4. INSDAG publication, "Teaching resources for steel design."
5. IS 800, "Design of steel structure."
6. IS 875 –1987, Part I to V.

B.ARCH. III (SEM -V)											
Building Services & Equipments III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-504	Building Services & Equipments III	Building Services & Equipments - 02 Design of Services - 04	2	4	25	25	50	50	-	100

- Emphasis**
1. Vertical transportation (Mechanical Devices)
 2. Fire Safety In Buildings
 3. Air Conditioning
 4. Acoustics
 5. design of services with respect to a given project

Contents 1. Vertical transportation

- Lifts, grouping of lifts, return-travel time, design of lift well, carrying capacity, installation requirements.
- Design of specialized lifts for heavy loads
- Concept of moving walks and escalators and their design concerns.

2. Fire safety in Buildings

- Theory of combustion
- Spreading of fire within the building and surrounding premises
- Active and passive means to control fire
- Study of fire regulations
- Fire extinguishing systems
- Fire resistance of different building materials
- Fire escapes

3. Air conditioning

- Different systems in current use from chilled water cooling systems to air handling package unit etc; their installations requirements and demand in building layouts.
- Supply air, return air ducting systems, their layouts and requirements along with building systems.

4. Acoustics

- Properties of sound, process of hearing, behavior of sound, acoustics for various spaces/ functional areas, noise control, outdoor and indoor sound input/output systems, noise control of building materials, prediction methods and calculations, noise reduction, properties of materials for sound insulation, testing, room acoustics, reverberation time in functional areas.

Projects:

- Onsite study of cinema halls, auditoriums, recording studios, lecture halls
- Market survey of surfacing products and fixtures, acoustical building materials, finishes.
- Case study of different buildings with reference to: fire protection measures, vertical transportation and air-conditioning systems.
- Market survey of various fire fighting devices.
- Integrated application of services with respect to some project

References

1. Master handbook of acoustics by Alton Everest
2. Time saver standards for architectural design data by Calendar
3. Fire safety in buildings by V.K.Jain
4. Mechanical and electrical equipments for buildings: Stein/Reynolds/Mc Guinness

B.ARCH. III (SEM -V) History of Architecture - III											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-505	History of Architecture - III		3	-	25	25	50	50	-	100

Emphasis: Evolution of the built environment or human habitat as a complex and multilayered synthesis of ‘culture, climate and construction’

Contents: Study of spatial order, structure and materials, articulations, symbols and meanings in the built forms at various scales of settlements, institutions and dwellings in the following time period:

13th – 18th Century AD

India

- Islamic Influences in India: Religious Philosophy, Islamic building types,
- Islamic Architecture : Sultanate and Mughal periods, evolution in North India
- Deccan and Central India – Mandu, Bijapur

West

- Renaissance
- Baroque
- Rococo

Projects: Drawings, Model making, Literature reviews, Assignments

References:

- Meaning in Western Architecture – Christian Norberg-Schulz
- A History of Architecture – Sir Banister Fletcher
- Bernini – Franco Borsi
- The Architecture of Michaelangelo – James S. Ackerman
- Baroque and Rococo – Sachervevell Sitwell
- The Four Books of Architecture – Andrea Palladio
- Architecture : From Prehistory to Post-Modernity – Trachtenberg and Hyman
- The History of Architecture in India - Christopher Tadgell
- Indian Architecture (Islamic Period) - Percy Brown.
- Living Architecture Series – Architecture of World: Islamic India, Renaissance, Baroque
- Graphic History of Architecture. – John Mansbridge

B.ARCH. III (SEM -V)											
Estimation Costing & Specifications											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
6	ARC-506	Estimation Costing & Specifications		4	-	25	25	50	50	-	100

Emphasis: To develop basic understanding the importance of estimate and designing of specification to achieve the best in terms of cost efficiency and standards.

Content:

- Introduction to subject and its importance giving practical examples.
- Understanding of various types of estimation used in the profession.
- Understanding of different methods of calculating quantities, i.e. approximate and detailed estimate.
- Understanding of various types of specification.
- Understanding of mode of measurement.
- Understanding of qualitative aspect in terms of material strength and workmanship.
- Understanding of importance of specification in contract document and execution purpose.

Projects: Study through practical site visits, presentations, case studies, tutorial, study of BOQ & workshop based on the application of theory to construction field.

Reference:

1. B.N Dutta – Estimating and costing
2. Rangwala – estimating and costing
3. Roshan Nanavati - Professional Practice

B.ARCH. III (SEM -V) Research Methodology											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
B. Group Of Subjects											
7	ARI-507	Research Methodology		3	-	25	25	50	-	50	100

Emphasis

To generate awareness in research and meaning of systematic search with comprehensive introduction of technical documentation.

Contents:

- General understanding of what is research, its objectives, various methods of research
- Designing research, Defining the problem, approach to research
- Research questions, questionnaire design, Data collection and hypothesis
- Use of theory, Review of literature,
- Ethical consideration, Plagiarism
- Qualitative , quantities and mix methods
- Technical writing and documentation
- Format for research paper
- Reference and bibliography

Project:

1. Selecting an appropriate article and generate understanding through critical evaluation of the particulars.
2. Introduction of selection of subject and writing a research paper on particular subject

References:

- A Practical Guide To Graduate Research , Stock Molly, New York , NY ,Mc Grew-Hill Book Company , 1985
- Environmental Design Research: How To Do It And How To Apply It ,Wehrli, Robert New York, Wiley 1986
- Finding Facts Fast: How To Find Out What You Want And Need To Know, Todd, Alden, Berkeley, Ten Speed Press
- Architectural Research , Snyder, James, New York , Van Nostrand Reinhold , 1984
- Inquiry By Design: Tool For Environment – Behaviour Research, Zeisel, John, Cambridge, Cambridge University Press: 1981
- Visual Research Methods In Design, Sandoff, Henry, Van Nostrand Reinhold , 1991
- Research Design: Quantitative And Qualitative Approaches, Creswell John, Thousand Oaks, Calif: Sage Publication
- The Elements of Scientific Thinking. Hoover , Kennet R 1984new York Ny St.Martins
- Practical Research: Planning and Design, Leedy, Paul D. And Jeanne Ellis Ormrod 2004 , Upper Saddle River, Nj : Merril Prentice Hall (Eight Edition)
- Chicago Manual of Style, (University of Chicago Press, 2003).
- MLA Hand Book for writers of research papers , Joseph Gibaldi, affiliated east-west press pvt ltd new Delhi

B.ARCH. III (SEM -V) Elective -V											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
8	ARE-508	Elective - V	1. Furniture & Product Design 2. Garden Landscape & Street Furniture	2	-	25	25	50	-	50	100

Furniture and Product Design

Emphasis Designing various products of day to day life, enhance its functional and aesthetic values, i.e. chair, wardrobes, multipurpose cabinets etc.

- Contents**
- What is Product design and its application
 - Designing in totality and thinking at micro level
 - Defining and understanding its function
 - Developing concept and applying innovative skills
 - Structural and decorative design
 - Anthropometry and ergonomics
 - Material selection and detailing
 - Cost and other consideration; design for mass or class
 - Aesthetics and its considerations
 - Gimmick in product design.

Projects Case study of designer products in the market, visit to showrooms and manufacturers
Study of products designed by master Architects and product designers
Assignments and design exercise to cover the above theory

- References**
- John Adkins Rickanson (1992) Art: The Way It Is, Harry N Abrams
 - Crever, Manual of furniture design
 - A to Z of product design

Garden Landscape & Street Furniture

1.

- Emphasis**
- Garden history, types, evolution ,
 - Abstraction, concept development
 - Visual relationship, spatial definitions
 - Outdoor furniture: types, usage criteria

- Contents**
- History of architecture, origin of gardens in history
 - Case study of all garden styles
 - Landform, grading, contour, etc.
 - Landscape planning and assessment, visual analysis ,Site analysis criteria

- Spatial definition and Space site volume understanding
- Urban parks and contemporary notion of recreational spaces
- Planting design, Circulation, Parking, Paving design, enclosures Etc.
- Street furniture and details in garden design
- Landscape enrichment with tangible and intangible elements like water, lighting, sculpture, fountains, Living creatures, sounds, smells etc
- Psychological factors in landscape architecture: Environmental perception and behavior
- Guest lecture on practice in outdoor recreation spaces design.

Projects:

1. outdoor perception by walking in a given stretch, and observing visual planes, colour, skyline, plants: form, color, texture, fragrance etc, and analyzing the same in terms of desirable and undesirable
2. Study of plantings
3. case study of certain historical and contemporary gardens
4. design problem

References:

1. Ian Mc Harg- 'Design with Nature'
2. Time saver standards for landscape design
3. Man and Nature

B.ARCH. III(SEM -VI) Architectural Design VI											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-601	Architectural Design VI	Institutional Building / Public Building with complexity of services / functions	-	6	125	125	250	-	250	500

Emphasis: Developing an architectural vocabulary relevant to the nature of institutional building / public building with complexity of services/ functions

Contents: Developing institutional characteristics with spatial composition and designing of the Part in relation to the ‘whole’, identity and nature of the institute, issues of ‘relevance’ in architectural design, client-contact, land-building relationships, issues of hierarchy and spatial order, efficiency of services and utilities, clarity of structural system, environmental concerns, use of appropriate technology, application of development control regulations, literature review

Projects: Buildings of an institutional scale e.g. library, court, cultural center, etc., case studies of appropriate architectural vocabulary, exercises on detailing a part in correspondence of the whole

References:

1. High rise buildings of urban design
2. Jencks, Charles – Modern Architecture
3. North, Whitney – Small urban spaces
4. Ashuhano, Yoshinobu – Exterior design in architecture

B.ARCH. III(SEM -VI)											
Building Materials and Construction Technology VI											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
1	2	3	4	5	6	7	8	9	10	11	
2	ARC-602	Building Materials and Construction Technology VI	Building Construction – 04	3	1	50	50	100	100	-	200

Emphasis: Overview with reference to previous studies. Understanding of application of materials and construction technology.

Contents:

- Overview of different building components as a whole structure and integrated system through case studies of relevant examples.
- Basic study of natural forces like wind, fire, flood, earthquake etc. and their impact on built form.
- Relevance of appropriate construction system and material application with reference to above mentioned forces.

Projects: Study through practical site visits, presentations, & case studies

Reference:

1. W.L. Mackey , “ Building Construction” Vol –I,II,III,
2. S.P. Arora & S.P. Bindra, “ Building Construction”
3. R. Barry, “The Construction of Building”
4. Henry J. Cowan, “Handbook of Architectural Technology”
5. Edward Allen, “Fundamentals of Building Construction”
6. Huntington , “ Building Construction”

B.ARCH. III(SEM -VI)											
Structural Design and systems VI											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-603	Structural Design and systems VI		3	-	25	25	50	50	-	100

Emphasis : Behavioral study of Typical structures :

Contents : 1. Design of RCC column :

- Analysis & Design an R.C.C. Member subjected to an axial compressive load by limit state method. i.e. R.C.C. column.
- Ductile detailing of main steel, lateral ties, confine zones, unconfine zones in RCC columns as per I.S. code 13920.

2. RCC Footing :

- Analysis & Design of RCC isolated column footing.
- Introduction to Combined footing & Raft footing .i.e. study of behaviour & detailing of steel reinforcement.

3. Doubly reinforced section :

- Analysis of doubly reinforced section.
- Calculation of Moment of resistance.

4. RCC Water Tank :

- Types of water tank,
- Various types of joints in water tank,
- Behaviour & reinforcement detailing for
 - On ground water tank- circular & Rectangular.
 - Over head water tank- Intez tank
 - Underground water tanks

5. Plate Girder & Castellated Girder:

- Introduction to plate girder behaviour & Application
 - Types of stiffeners, Welded & riveted girders
- Introduction to castellated girder behaviour & Application

6. Connections in steel structure:

- Types of connections - Riveted, Welded & bolted connections.
 Connection details for an axial members i.e. members of a truss.
 Connection for Beam to Beam connection and Beam to Column connection.
- Framed connection
 - Seated connection

Project : 1. Design of structures with detailing based on course content.
 Site visits & case studies

Reference :

1. H.J.shah, “ Reinforced concrete, Vol- I. & II”
2. S. Ramamrutham & S. Narayan, “Design of reinforced concrete structures.”
3. Sushil Kumar, “Treasure of R.C.C. Design.”
4. L.S.Negi, “Design of steel structure.”
5. A.S. Arya & J.L. Ajamani, “Design of steel structure.”
6. INSDAG publication, “Teaching resources for steel design.”
7. Srimani & Das, “castellated girder.”

8. IS 456-2000, “design of RCC elements?”

B.ARCH. III(SEM -VI) History of Architecture -IV											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-604	History of Architecture - IV		4	-	25	25	50	50	-	100

Emphasis: Evolution of the built environment or human habitat as a complex and multilayered synthesis of ‘culture, climate and construction’

Contents: Study of spatial order, structure and materials, articulations, symbols and meanings in the built forms at various scales of settlements, institutions and dwellings in the following time period:

Mid 18th Century to 20th Century

India

- Colonial Architecture – Calcutta, Delhi, Mumbai: Introduction of typologies – bungalows, Forrest houses, chawls etc., Architecture of Lutyen’s Delhi, Banares Hindu University, Shanti-niketan, etc.
- Emerging industrial India and Indian Encounters with Modernity – Searching for Identity of a nation
- Works of Indian Masters
- Whatever happened to Vernacular Architecture?

West and others

- Industrial Revolution and its impacts
- Modern movement in Architecture: Modern Architectural Movement and various sub-movements from Neo-Classicism to the Pioneers.
- Works of Masters

Projects: Drawings, Model making, Literature reviews, Assignments

References:

- Meaning in Western Architecture – Christian Norberg-Schulz
- A History of Architecture – Sir Banister Fletcher
- Architecture Through the Ages – Talbot Hamlin
- Architecture : From Prehistory to Post-Modernity – Trachtenberg and Hyman
- Space, Time and Architecture – Sigfried Gideon
- **Rethinking Architecture: a reader in cultural theory, Leach, Neil (Ed.)**
- **When was modernism in Indian art? - Geeta Kapur**
- **Architecture and Independence – Jon Lang, Miki and Madhavi Desai**
- Graphic History of Architecture. – John Mansbridge

B.ARCH. III(SEM -VI) Landscape Design											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-605	Landscape Design		2	-	25	25	50	-	50	100

Emphasis Appreciation of natural landscapes, formative forces, ecological concerns, value association to outdoor environment quality, site assessment, analysis, planning, study of plantings for application in landscape design etc.

Contents

- Landform, grading, contour, Conservation of resources
- Landscape history, types, planning and assessment, elements
- Visual relationship. Spatial definition, Housing and landscape
- Plants identification and planting design
- Surfaces, enclosures, outdoor furniture, lighting etc
- Garden history, types, evolution till present form
- Abstraction, concept development
- Visual relationship, spatial definitions
- (Tangible and intangible enrichments)Water, rocks, live creatures, lighting, fountains, sculptures etc.
- Outdoor furniture: types, usage criteria

Projects:

1. Experiential study pertaining to outdoor environment
2. Plant species study
3. Design problem

References:

1. Design with nature: Ian Mcharg
2. John Ormsbee Simonds: Landscape Architecture
3. Laurie Michael: Introduction to Landscape Architecture

B.ARCH. III(SEM -VI)											
Basics of Construction Management											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
B. Group Of Subjects											
6	ARI-606	Basics of Construction Management	Construction Project Management	4	-	25	25	50	50	-	100

Emphasis : To Introduce the students with Construction Management problems & techniques in the field and to briefly introduce an understanding regarding the economics of building industry. To develop an understanding regarding the importance of resource management in today's context.

Contents : (A) Construction Management

- 1) Definition of the term 'Management', and understanding Planning, Programming in advanced and timely execution thereof.
- 2) Site Management and Job Layout. Reshaping, rescheduling of work as per the site conditions and prevailing circumstances.
- 3) Office Management and its structure with the criteria's for decision making, relevancy of decision-making and responsibilities therefore.
- 4) Methods of Planning of execution of work considering various factors like availability of design, details, material, labour, etc. and comparison of planning and actual execution of work.
- 5) Labour welfare laws and other laws related to the construction industry.
- 6) Various methods for planning and programming for Project management – Various Schedules, Network Techniques (CPM, PERT), Bar charts, etc.
- 7) Introduction to basic software related to Project Management.

(B) Building Economics

1. Demand and Supply of built spaces.
2. Market analysis – choice of consumer.
3. Building activity as an industry.

References : 1) A to Z practical building construction and its management, Mantri Institute.
 2) Techniques for Construction Networking Scheduling, James. D. Stevens.
 3) A textbook of economic theory: Aldred W. Stonier & DauglenC. Hague.
 The English language books SC & Longuian Group Ltd. (1972)

B.ARCH. III(SEM -VI)											
Housing & Community Planning											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
7	ARI-607	Housing & Community Planning		4	-	25	25	50	-	50	100

Emphasis: Developing an appreciation of Housing as a process evolving itself with changes in people-place-time

Contents:

Introduction to Housing Theories & Policies – Introduction to Concepts of Housing Typologies; Introduction to Socio-political aspects of urbanism, urban growth and its implication on housing and community development in India; Housing problems in urban and rural sectors, impact of urbanization on housing need, demand and supply; Cost Effective Housing – Socio-Economic Factors; Forms and Materials

Housing Legislation & Finance – Review of existing Housing Byelaws and their impact on resultant residential environment within given contexts; Review of existing systems of Housing Provisions and Policies; Housing Finance Agencies – their roles and objectives

Methods and Techniques of Housing Surveys – Data Base Management; Collection, Processing, Retrieval, Storage of data; Sources of data and information,

Determinants of Housing Interventions Significance of Public Participation, Role of NGOs, Anthropological and Cultural Factors of a Community Life-Style, Economic Factors and Affordability as determinants of housing interventions

Projects: Studio Project aimed at developing an appropriate methodology for qualitative assessment of existing/chosen housing site for identification of characteristics & problems therein; and suggests strategies related to suitable interventions and management of the housing

References:

1. Rapoport, Amos – House, Form and Culture
2. Rapoport, Amos – Human Aspects of Built Form
3. Hall, Edward T. – Hidden Dimension
4. Bhatia, Gautam – Life, Works and Writings of Laurie Baker
5. Correa, Charles – Housing and Urbanisation

B.ARCH. III(SEM -VI) Elective -VI											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
8	ARE-608	Elective - VI	1. Architectural Journalism 2. Art in Architecture	3	-	25	25	50	-	50	100

1. Architectural Journalism

Emphasis

- To create understanding and scope of professional use of subject and explore the potential application in field of architecture
- Context and purpose of architectural journalism and criticism, relations between practicing architects and journalists and critics and the role of media and photography in the field of architecture

Contents

- Essential skills of a news reporter: finding stories, interview and writing for audiences, writing features, reviews and columns
- Architectural journalism; components, function in society, background research, architectural photography
- Key texts concerning architectural journalism in particular, developing an understanding of the work of architectural journalists
- Understanding the production of contemporary architectural journalism, to develop an ability to critically appraise selected individual pieces of journalism.
- Research and involvement in the latest construction techniques, building materials, services, analysis of building structures, etc.
- Attendance at theater and music performances, film screenings, museum and gallery tours, architectural site visits, symposia, lectures, encounters with artists
- Research methodologies, academic writing; relevant sources, methods of collecting and classifying data, developing critical thinking and generating argument, writing conclusion and presentation of research outcomes

Projects

Writing an article

Book review

Criticism on an article in form of discussion and debate

References

2. Art in Architecture

Emphasis: Study & overview the influence of cultural system & ethos in the evolution & development of traditional architecture of a place & region

Content: Introduction to vernacular & traditional architecture. To understand & identify the constants of a traditional building environment in today's multi cultural society. Study of cultural connotation & other determinants of traditional built form as, climate, site, building material & technology along with behavioral studies. Understanding the domestic architecture of a place & various typology of built form in a traditional settlement

Reference:

1. Oliver Paul: Encyclopedia of vernacular architecture , Vol I,II,III
2. Rapoport Amos: House form & culture
3. Criticism in Architecture
4. Jain Kulbhushan: Thematic Spaces
5. Jain Kulbhushan & Jain Minakshi: Mud Architecture of Indian Desert,
6. Jain Kulbhushan & Jain Minakshi: Indian City in the Arid West
7. Rudofsky Bernard: Architecture without Architects.

B.ARCH. IV(SEM-VII) Architectural Design VII											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-701	Architectural Design VII	Urban Insert / Architectural Insert in an Urban Context	-	12	150	150	300	-	300	600

Emphasis: Urban Insert / architectural Insert in an urban context

Contents:

A. Study of Town / City

- Study of History & Evolution of Town
- Study of Natural elements like Climate, Topography, etc. for understanding the settlement pattern
- Study of Demographic profile, Occupational Pattern, etc. for understanding its impact on the development trends.
- Study of Regional Connectivity, City Structure, Urban Infrastructure (Physical & Social), Administrative Setup, Development Control Mechanism etc. for understanding the functioning and regulation of the city.
- Detailed Study of Settlement Pattern including Blocks, Cluster, House form and their Typology, Important institutions and market places, Local material and construction technology, etc.
- Identification of relevant site and project for Design Exercise

B. Design Exercise

- Site Analysis and Programmatic Case Study
- Study of various alternatives for approach towards design
- Architectural Design of a public purpose building keeping ‘context’ as the central idea.

Projects: **Design of a Public Purpose Building with the context:** Selection of a Town / City and comprehensive study of the same with a view of identifying the need of the city with respect to the aspirations of the people.

References:

1. High rise buildings of urban design
2. Jencks, Charles – Modern Architecture
3. North, Whitney – Small urban spaces
4. Ashuhano, Yoshinobu – Exterior design in architecture

B.ARCH. IV(SEM -VII)											
Building Materials and Construction Technology VII											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
1	2	3	4	5	6	7	8	9	10	11	
2	ARC-702	Building Materials and Construction Technology VII	Building Construction – 06	4	2	50	50	100	100	-	200

Emphasis: - Detail study to understand Sustainable Architectural Building material Science and exploration of modern materials and technology.

Contents:

- Understanding the concepts of sustainability and eco friendly materials.
- To explore hi-tech building construction technology (cable stress structures, turning torso, suspension bridges etc.)
- To explore new and hi tech building materials(titanium sheets etc)
- Introduction to requirements of building for LEED rating

Projects: Study through practical site visits, presentations, & case studies

Reference:

1. W.L. Mackey , “ Building Construction” Vol –I,II,III,
2. S.P. Arora & S.P. Bindra, “ Building Construction”
3. R. Barry, “The Construction of Building”
4. Henry J. Cowan, “Handbook of Architectural Technology”
5. Edward Allen, “Fundamentals of Building Construction”
6. Huntington , “ Building Construction”

B.ARCH. IV(SEM -VII) Advanced Structural Design and systems											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
4	ARC-703	Advanced Structural Design and systems		2	-	25	25	50	50	-	100

Emphasis : **Introduction to Advanced Structural Systems.**

Contents : **1. Tall Structure :**

Introduction of Tall structures, Effect of gravity & lateral load. Introduction to various Lateral load resisting systems due to wind & earthquake for tall buildings - Truss, frame, shear wall, core & outrigger, Tube, tube in tube, Bundled tube, Belt truss, Staggered truss system etc, Material, connection, Foundation system. Case studies of world's famous tall buildings.

2. Tensile structure :

Introduction to Tensile structure, spanning, application, classification, material, stability against wind, various types of tensile structure- cable stayed, suspension cable, cable nets, membrane , Details of Connection for tensile structure, construction technique. Case studies.

3. Space Frame:

Introduction to space frame, behaviour under loading , application, connection & case studies.

Project : 1. World famous Case studies of various structures based on course content.

Reference :

1. Salvadory, "Structures in architecture."
2. Frei Otto, "Tensile Structures."
3. Hannskarl Bandel, "Structure System."
4. "Cable net structure"
5. Daniel L. Schodek, "Structures."
6. Taranath S. Bungle, "Structural Systems for Tall Structures."
7. Key, "earthquake Design practice for buildings."
8. James. Harris, "Masted structures in Architecture."

B.ARCH. IV(SEM -VII) Advanced Services											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
3	ARC-704	Advanced Services		2	-	25	25	50	50	-	100

Emphasis

Introduction to specialized building services such as:

- Building automation systems and devices
- Advanced Security and Surveillance systems
- Advanced vertical transportation methods
- Intelligent building systems

Study of a building as an integrated set of basic and specialized services, international services standards, current practices, and relevant technology.

Contents

- Building automation systems and devices
- CCMS (Centrally controlled monitoring systems for various building categories) working principles and its components.
- Optimizing energy consumption with the help of BAS
- Automatic entry systems: motorized 'P' gates, different types of sliding doors, functions and applications
- Power controlled roofing systems: louvers/slides for natural light controls
- Advanced Security and Surveillance systems
- Introduction to security and surveillance for protective and defence purposes as part of architectural built forms/functional and planned areas. Safety and security concerns, levels and planning for different building types
- Safety and surveillance equipments like CCTV, laser based security systems, passive infrared detectors, electronic fencing, wired and wireless security systems, biometric access controls, X-Ray security scanning, various types of metal detectors, their working principle, components and fixing methods
- Automatic fire safety methods
- Advanced vertical transportation methods
- Multiple escalators for skyscrapers, their working strategy and design concerns
- Application of escalators and moving walks in various building types, and design concerns
- Intelligent building systems
- Smart buildings concept and working principles,
- Understanding of energy saving and energy generating mechanisms, wind turbines, movable solar panels, earthquake resistant mechanisms, seismic dampers etc.

- Projects:**
- Project/studio work to focus upon energy efficient, energy saving and environment friendly techniques/materials/systems to be used with practical consideration for implementation/installation of the required devices and methods.
 - Introduction to requirement of security and surveillance for protective and defensive purposes. Regulations/protocol/legal aspects (international and national) followed for installations of the same.
 - Onsite study of shopping malls, multiplexes, multiple facility recreation centres, banks, museums, airports, railway stations etc to understand the integration and execution of all services with above mentioned aspects.
 - Market survey of Products related to above discussed safety and surveillance techniques.
 - Study of innovative/intelligent/automated devices as part of architectural fittings/furnishings/furniture/services provided which help in the better integration of the services and functional requirements of planned and unplanned areas.

- References:**
1. Fire safety in buildings by V.K.Jain
 2. Mechanical and electrical equipments for buildings: Stein/Reynolds/Mc Guinness
 3. Internet sources

B.ARCH. IV(SEM -VII)											
Research Skills & Project Introduction											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
5	ARC-705	Research Skills & Project Introduction	Thesis Proposal Preparation	2	-	25	25	50	-	50	100

Emphasis

Understanding the need for scientific research in fundamental Architectural Design thoughts and methods and applied fields to architecture and built environment.

Contents:

- Exploration of research topic
- Selection of subjects and researching
- Initiation of case studies, Methods of study
- Preparation of Thesis Proposal based on research exploration
- Application of components of Research Methodology
- Submitting draft and working process
- Structuring the project, writing proposals
- Presentation – project and report

References:

- A Practical Guide To Graduate Research , Stock Molly, New York , NY ,Mc Grew-Hill Book Company , 1985
- Environmental Design Research: How To Do It And How To Apply It ,Wehrli, Robert New York, Wiley 1986
- Finding Facts Fast: How To Find Out What You Want And Need To Know, Todd, Alden, Berkeley, Ten Speed Press
- Architectural Research , Snyder, James, New York , Van Nostrand Reinhold , 1984
- Inquiry By Design: Tool For Environment – Behaviour Research, Zeisel, John, Cambridge, Cambridge University Press: 1981
- Visual Research Methods In Design, Sandoff, Henry, Van Nostrand Reinhold , 1991
- Research Design: Quantitative And Qualitative Approaches, Creswell John, Thousand Oaks, Calif: Sage Publication
- The Elements Of Scientific Thinking. Hoover , Kennet R 1984new York Ny St.Martins
- Practical Research: Planning And Design, Leedy, Paul D. And Jeanne Ellis Ormrod 2004 , Upper Saddle River, Nj : Merril Prentice Hall (Eight Edition)
- Chicago Manual of Style, (University of Chicago Press, 2003).
- MLA Hand Book for writers of research papers , Joseph Gibaldi, affiliated east-west press pvt ltd new Delhi

B.ARCH. IV(SEM -VII) Urban & Regional Planning											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
B. Group Of Subjects											
6	ARI-706	Urban & Regional Planning		3	-	25	25	50	-	50	100

Emphasis: Developing an understanding of urban context with its schematic abstraction and contemporary manifestations

Contents: **Evolution of human settlements & Interpretation of urban forms** – historic determinants and settlement types; an overview of landmark developments in conceptual theories related to settlement patterns and the resulting dynamics of changing urban forms and interpretation of urban form as manifested in literature, arts, technology and politics during different stages of time

Appreciation of Urban Morphology and Form as a correlation of activity-space-time-ambience; Principles of structuring urban spaces – spatial parameters of activities; Impacts of cultural geography, traditions, communications and mobility on Image ability of a place

Contemporary Planning Process & Mechanisms –significance of land use planning, Development Plan & various methods of managing land as TP Schemes etc.

Planning and Management of Urban Infrastructure and urban Governance

Physical & Social infrastructure Systems from Unit Level to City Level (Water Supply, Sewerage, Electricity, Solid Waste, communication and various social amenities); innovative approach for integrated infrastructure Various Authorities and their jurisdictions related to urban development

Introduction to aspects of sectoral elements of regional planning: macro and micro

Projects: Various Site Studies for Appreciation of Changing City Form as a palimpsest of changing political, social and anthropological events

References:

1. Kevin Lynch, Image of the City
2. Kevin Lynch, Good City Form
3. Christopher Alexander, Timeless Way of Building
4. Christopher Alexander, Pattern Language
5. Amos Rapoport, Human Aspects of Urban Form
6. Italo Calvino, Invisible Cities,
7. Spiro Kostof, A History of Architecture – Settings and Rituals
8. Paul D Spreiregin, The Architecture of Towns and Cities
9. Paul D Spreiregin, On the Art of Designing Cities
10. Aldo Rossi, The Architecture of the City
11. Edmund N Bacon, Design of Cities
12. Geoffrey Broadbent, Emerging concepts in Urban Space Design
13. Gordon Cullen, Townscape

B.ARCH. IV(SEM -VII) Elective -VII											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
7	ARE-707	Elective -VII	1. Disaster Management 2. Intelligent Buildings	3	-	25	25	50	-	50	100

1. Disaster Management

Emphasis

- Probable disasters, Disaster management: general approach at society/community, city level, urban planning strategies & habitat design strategies for disaster mitigation , resource management during disasters, strategies for recovery

Contents

- **The Contemporary world and the probable disaster risks**
 1. Global/ national/ regional disaster risk situation
 2. Evolution of disaster risk management
 3. Disaster management models and approaches for different emergencies.
- **Disaster Risk Management Process**
 1. Vulnerability factors (includes Residential as well as Industry and Commerce)
 2. Coping capacities (at different levels, and of different agencies)
 3. Outputs from risk assessment and capacity building framework from the same
- **Prevention / Mitigation**
 1. Framework for prevention and mitigation with focus upon between environment
 2. Structural mitigation
 3. Community based disaster management (including specialized measures for different set of industrial set-ups and surrounding settlements)
 4. Institutional and legal mechanisms
 5. Role of public awareness
 6. Preparation of prevention and mitigation by urban planning strategies & conducive habitat design.
- **Preparedness Planning**
 1. Key preparedness considerations:
 2. Coordination and the emergency coordination center
 3. Probable damage assessment and needs analysis, with special focus upon between environments.
- **Emergency Response**
 1. Activating and managing the emergency coordination centers (all levels)
 2. Damage assessment and needs analysis
 3. Resource management at different levels
- **Recovery and Reconstruction**
 1. Principles and concepts of recovery
 2. Community involvement & Rehab designs.
 3. Concluding recovery interventions

Projects:

1. Case studies of different examples, lessons learnt

References:

2. Intelligent Buildings

Emphasis

- BAS (Building automation systems) and devices for optimizing energy, security, surveillance, fire safety etc.
- Smart buildings, its components current practices, and relevant technology.

Contents

- Building automation systems and devices
 - CCMS (Centrally controlled monitoring systems for various building categories) working principles and its components.
 - Optimizing energy consumption with the help of BAS
 - Automatic entry systems: motorized 'P' gates, different types of sliding doors, functions and applications
 - Power controlled roofing systems: louvers/slides for natural light controls
- Advanced Security and Surveillance systems
 - Safety and surveillance equipments like CCTV, laser based security systems, passive infrared detectors, electronic fencing, wired and wireless security systems, biometric access controls, X-Ray security scanning, various types of metal detectors, their working principle, components and fixing methods
- Intelligent building systems
 - Smart buildings concept and working principles,
 - Understanding of energy saving and energy generating mechanisms, wind turbines, movable solar panels, earthquake resistant mechanisms, seismic dampers etc.

Projects:

1. On site studies
2. Market surveys of different electrical cables and fixtures, electrical accessories.

References:

1. Time saver standards for architectural design data by Calacender
2. Heating cooling, lighting by Norbert Lechner
3. Electrical wiring estimating and costing-Uppal

B.ARCH. IV (SEM -VIII) Professional Training											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-801	Professional Training	Refer Note A							100	100

Note A: For Semester VIII compulsory training of 18 weeks will be required under a COA registered Architect in India or equivalent in foreign countries. Submission of 18 weeks work in form of a Portfolio is mandatory along with Architect's Certificate at the time of Viva-voce, to continue the IXth Semester Training.

NOTE: Students are supposed to decide Thesis Topics and their Guide before the commencement of Training Period, so that spare time during the training period may be utilized for the research work for the thesis. First Review for data collection and project justification for Thesis shall be conducted in the First week of academic session for Semester X (Thesis).

B.ARCH. V (SEM - IX) Professional Training											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
A. Core Subjects											
1	ARC-901	Professional Training	<ul style="list-style-type: none"> Refer Note A. 							100	100

Note A:

For Semester IX, a compulsory training of 18 weeks will be required under a COA registered Architect in India or equivalent in foreign countries. Submission of **18 x2 weeks work will be evaluated**. It is mandatory for the student to appear in the exam (viva/ jury/ review) and clear it **for qualifying for Thesis Work to be done in Semester X.**

B.ARCH. V (SEM -X)											
Architectural Design X (Thesis)											
Sr. No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
1	ARC-1001	Architectural Design X (Thesis)	1. Thesis 2. Submission of a Complete Works Portfolio (CWP) is mandatory as a part of this subject to get a N.O.C. for issuance of Degree Certificate	-	22	250	250	500	-	500	1000

Emphasis: Design thesis to evaluate the student's ability to explore in the field of architecture.

Contents:

- In-depth investigation in the chosen area
- Analysis of investigation, influence to establish underlying principles.
- Evaluation of existing theory in Contemporary context.
- Establishment of hypothesis – design and its substantiation.

Projects:

1. The area of work chosen by students with the guidance of a faculty member can be in any of the following areas:
Architectural Theory, history, design determinants, design language, design valuation, building types, urban design, housing, interior design, landscape design, building technology, environmental science, professional practice or any other related field accepted by the school as relevant to the field.
2. Submission of a **Complete Work Portfolio(CWP)** is a mandatory as a part of this subject to get N.O.C for Issuance of Degree Certificate

B.ARCH. V (SEM -X) Professional Practice											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
2	ARC-1002	Professional Practice		4	-	50	50	100	100	-	200

Emphasis : To develop an understanding of basic professional skills to practice of various types of projects and its complexity

Content

- Role and responsibilities of a professional
- Prevailing pattern of professional practice
- Comparison and inter relationship with other professionals and professional bodies
- Various professional associations and registering body; their responsibilities, detail understanding of professional ethics; fee structure
- Understanding of various professional competition
- Office organization and management skills
- Detail understanding of office day to day responsibilities towards staff and other government bodies
- Understanding of contract and its management, site supervision
- Role, responsibilities, liabilities and indemnity of client, contractor, sub contractor and clerk of work.

Projects : Study of all aspects in reference to relevant core study; seminar related to prevailing practice.

Reference:

- Hand book on professional practice by council of architecture, New Delhi
- Hand book on professional practice by Indian Institute of Architecture
- BPMC Act
- GTP and GDCR rules
- Professional practice with Elements of Estimating, Valuation contract and Arbitration By *Dr. Roshan H. Namavati*
- Estimating and costing in Civil Engineering Theory and Practice by B.N. Datta

B.ARCH. V (SEM -X)											
Elective -VIII											
Sr.No.	Subject Code	Subject Name	Sub Content / Emphasis	Teaching Scheme		Internal Evaluation			University /External Evaluation		Grand Total
				L (Hours)	S/W (Hours)	Cont. Evaluation	End Sem Evaluation	Total (6+7)	Theory Exam	Jury / Review	
	1	2	3	4	5	6	7	8	9	10	11
C. Electives											
3	ARE-1003	Elective -VIII	1. Architectural Conservation 2. Urban Design	4	-	25	25	50	-	50	100

Architectural Conservation

Emphasis: Promotion of an understanding for scholastic and professional approach to architectural conservation as an attitude to development

Contents:

Introduction to Programming of Architectural Conservation Projects – Appreciation and Identification of Values related to Heritage and Culture – their Interpretation and Presentation; Concept of Ethics and Authenticity; Degrees of Intervention; basic Principles of Conservation viz., Preservation, Restoration, Reuse, Rehabilitation, Regeneration, Revitalisation, Up gradation, Redevelopment

Emergence of Conservation as a Subject and as a Profession – History of ASI; History of Conservation Movement in UK, Italy; History of Conservation Movement in India

Global and National Heritage Management Notions – Conservation Legislation in India vis-à-vis that in Europe; World Heritage Sites – recognition criteria, status after inscription; ICOMOS Charters e.g., Venice, Burra, Florence; Pilot Projects of Architectural Conservation in India and Europe

History, Theory and Criticism of Architecture – Re-introduced as a view point to understand built heritage of India

Projects: Studio Project aimed at developing an appropriate methodology for qualitative assessment of a heritage resource and suggest relevant strategies for interpretation and presentation;
Critical Judgement of architecture through traditional, historical and contemporary examples and writings

References:

1. Feilden, Bernard – Guidelines for Conservation – A Technical Manual, INTACH
2. Trystan Edwards – Good and Bad Manners in Architecture, John Tiranti Ltd, 1946
3. Kapila Vatsayayan, Concepts and Responses, IGNC, N Delhi, 1992
4. Allan Dobby – Conservation and Planning
5. John Earl – Building Conservation and Philosophy
6. Bonnie Burnham – The Protection of Cultural Property, 1974
7. ICOMOS Charters, 1993
8. David L Uzzell, Heritage Interpretation, Belharu Press, 1989
9. History, Theory of Criticism (A collection of articles e.g. Arch & Tradition Isn't Trad-dad!)
10. Tom Heath, Method in Architecture, John Wiley & Sons
11. David Watkin, Rise in Architectural History
12. Chris Abel, The Language Analogy in Architectural Theory & Criticism

Urban Design

Emphasis:

Architecture is not an isolated private statement. Rather, it is at once a public (urban) act and a reflection of our understanding of the world at any given moment: i.e., what it might be. Its formal order both reflects and promotes plausible ideas of social, philosophical and urban order. Architecture is an art to be sure, but it is a social art, an urban art.

It will operate on the premise that public spaces are important to the livability of a city. The public realm quite literally provides the platform for its arts and culture to exist and adds to the desirability of its inhabitants.

Content:

1. Understanding the term Urban: Definitions and Approaches, looking at how various theorists have defined / understood the “urban” or the “city” as an object of investigation.
2. Urbanism & New Urbanism
3. Understanding the term Urban Design and inter-relation of Architecture and Urban Design.
4. 'Urban Design' as a focus on physical improvement of the public environment.
5. Public Realm, definition and understanding the design of Public realm
6. City Scapes / Town Scapes, understanding and analysis
7. Understanding of Terminologies viz; Tissue, Block, Grains, Porosity, Typology, District, Landmarks,

Exercise:

1. Literature and / or Live Case-studies in Urban Design
2. Book Review

References:

1. Architecture of Town & Cities, *Paul Spreiregen*
2. Image of the City, *Kevin Lynch*
3. Good City Form, *Kevin Lynch*
4. Town & Squares, *Paul Zucker*
5. Pattern Language, *Christopher Alexander*
6. Life & Death of Great American Cities, *Jane Jacobs*