

**UTTAR PRADESH TECHNICAL UNIVERSITY
LUCKNOW**



SYLLABUS

Bachelor of Architecture

3rd Year (V & VI Semester)

(Effective from Session 2015-2016)

UTTAR PRADESH TECHNICAL UNIVERSITY, LUCKNOW

FACULTY OF ARCHITECTURE

BACHELOR OF ARCHITECTURE

SEMESTER - V

SCHEME OF TEACHING AND EXAMINATION

S. NO.	SUBJECT CODE	NAME OF THE SUBJECT	PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
			LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
						CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	NAR - 501	ARCHITECTURAL DESIGN - V	2	0	7	30	70	100	75	25	100	200	9	6 + 6 HRS.
2	NAR - 502	CONSTRUCTION & MATERIALS - V	2	0	4	25	50	75	50	25	75	150	6	3 HRS.
3	NAR - 503	ARCHITECTURAL STRUCTURES - V	2	1	0	15	35	50	50	0	50	100	3	3 HRS.
4	NAR - 504	INTERIOR DESIGN	1	0	2	15	35	50	50	0	50	100	3	3 HRS.
5	NAR - 505	ESTIMATION & SPECIFICATIONS	1	2	0	15	35	50	50	0	50	100	3	3 HRS.
6	NAR - 506	ARCHITECTURAL SERVICES - IV	1	1	0	15	35	50	50	0	50	100	2	3 HRS.
7	NAR - 507	HISTORY OF ARCHITECTURE - IV	2	1	0	15	35	50	50	0	50	100	3	3 HRS.
8	NAR - 508	RESEARCH - IV	1	1	0	15	35	50	0	0	0	50	2	-
9	NAR - 509	DISASTER MANAGEMENT	1	1	0	10	15	25	25	0	25	50	2	3 HRS.
		TOTAL	13	7	13							950	33	
		GENERAL PROFICIENCY										50		
		GRAND TOTAL										1000	33	

UTTAR PRADESH TECHNICAL UNIVERSITY, LUCKNOW

FACULTY OF ARCHITECTURE

BACHELOR OF ARCHITECTURE

SEMESTER - VI

SCHEME OF TEACHING AND EXAMINATION

S. NO.	SUBJECT CODE	NAME OF THE SUBJECT	PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
			LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
						CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	NAR - 601	ARCHITECTURAL DESIGN - VI	2	0	7	30	70	100	75	25	100	200	9	6 + 6 HRS.
2	NAR - 602	CONSTRUCTION & MATERIALS - VI	2	0	4	25	50	75	50	25	75	150	6	3 HRS.
3	NAR - 603	ARCHITECTURAL STRUCTURES - VI	2	1	0	15	35	50	50	0	50	100	3	3 HRS.
4	NAR - 604	LANDSCAPE DESIGN	1	0	2	15	35	50	50	0	50	100	3	3 HRS.
5	NAR - 605	BUILDING BYE - LAWS	1	0	2	15	35	50	0	0	0	50	2	-
6	NAR - 606	ARCHITECTURAL SERVICES - V	1	1	0	15	35	50	50	0	50	100	2	3 HRS.
7	NAR - 607	HISTORY OF ARCHITECTURE - V	2	1	0	15	35	50	50	0	50	100	3	3 HRS.
8	NAR - 608	RESEARCH - V	1	1	0	15	35	50	0	0	0	50	2	-
9	NAR - 609	THEORY OF ARCHITECTURE	1	1	0	15	35	50	50	0	50	100	3	3 HRS.
		TOTAL	13	5	15							950	33	
		GENERAL PROFICIENCY										50		
		GRAND TOTAL										1000	33	

B. ARCH. SEMESTER – V
NAR – 501, ARCHITECTURAL DESIGN - V

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	7	30	70	100	75	25	100	200	9	6 + 6 HRS.

OBJECTIVES

- Understanding basic structure forms in relation to space and materials.
- To understand the different structural systems and their mechanism/logic.
- To understand the constraints and possibilities of designing with the range of structural systems available.
- To employ and integrate these structure systems into the design ideology, especially in proposals requiring large spans.
- It should be noted that emphasis should be on the understanding of basic structural concepts and graphical presentation of systems rather than their structural analysis.

Module-1 Introduction

Acquainting with the various structural systems and their relation to form, materials and function.

Module-2 Types of Structural Systems

Understanding of Loads on structures and Basic state of stresses.

Through seminars, drawings and models, a study of different structural systems, their mechanism of load bearing, adaptability, efficiency and limitations.

Trabeated Brick and Stone, Columns and Beams, Slabs one way and two way, Coffers, Cantilevers, Portals.

Arcuated Types of Arches, Vault and Dome, Squinch and Pendentives.

Vector Trusses and Space Frames.

Form Folded slabs, Shells, Hyperbola-paraboloid.

Active

Tensile Tents, Cables and Pneumatic vis-à-vis materials and plan shape/s.

Vertical Systems Cores and shear wall, Rigid & braced frame, Moment resistant frames, Core and out rigger, Framed tube, Trussed tube, Bundled tube, Tube in tube and Hybrid systems.

Module-3 Design Proposal

Design of functional spaces that incorporate large span structures, repetitive modules, medium column free spans and multi-storied aspects that use the varied structural systems.

Module-4 Integration of design of structural system

Development of the design proposal to the stage of integrating structure system necessary for the execution of the project and making relevant drawing for the same.

SUGGESTED STUDIO EXERCISES

1. Literature study and Case Study of different structural systems as used in famous buildings of the world.
2. Presentation of the system with scaled models or actual structures in construction yard.
3. Design of buildings like Stadia, Auditorium, Petrol Pump, Factories, Museums, Malls, Factories and buildings using varied structural systems.
4. Study tours to relevant urban destinations for primary documentation.

REFERENCE BOOKS

1. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachusetts.
3. Ahmet Hadrevic, "Structural Systems in Architecture", Book Serj Publishing, South Karolina.
4. Heinoengel, "Structure System"
5. Structural System for Tall Buildings, CTBUH, McGraw-Hill, Inc.

B. ARCH. SEMESTER – V
NAR – 502, CONSTRUCTION & MATERIALS – V

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	75	50	25	75	150	6	3 HRS.

OBJECTIVES

- To introduce and familiarize the students with constituents, manufacturing process/availability, properties/characteristics, defects, classifications and uses of building materials used in construction;
- To understand the use of these building materials in building works.
- To introduce and familiarize the students with the various metal/gypsum board partitions and false ceilings construction works.
- To understand the use of the metal doors/windows in existing and new construction.
- To familiarize the student with the building construction practices on site.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1	Gypsum Products	Introduction - Gypsum Board, Suspended Ceiling (Board & Tiles), Gypsum Plaster, Components and Accessories. Jointing and Finishing.
Module-2	Metals (Ferrous)	Iron (Pig, Cast & Wrought). Variety of M.S. sections – Sheets (plain & corrugated), Flats, Bars (round & square), Angles (Equal & Unequal), R.S. Sections (I beams, Channels, Tees), Hollow tubular sections available for application in building industry. Stainless Steel and Alloys.
Module-3	Water Proofing Compounds	Metal Coatings – Electroplating, Spraying, Galvanizing. Various waterproofing compounds – Neoprene, Butyl, EPDM, PVC, Polyurethane.
Module-4	Asbestos Products	Understanding of various Asbestos Cement products available for application in building industry.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

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

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-5	Workshop/Construction Yard Practice	Practicing in construction yard by making the examples of components covered under 'Building Construction Technology'.
Module-6	Site Exposure	Exposure to advanced building construction practices on site of various items of work from foundation to roof and finishes.

LIST OF ASSIGNMENTS

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

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-1	Structural Steel Works	Typical metal joinery - Mechanical (riveted & bolted), Soldering and Brazing and welding. Detailing of structural steel work – Beam to Column joint, Beam to Beam joint, Column Splice, Column Base, Roof Truss to Column joint.
Module-2	Doors & Windows (Metals)	Mild steel L and Z section Pressed steel section.
Module-3	Shutters (Operational Mechanisms)	Complete understanding of operational mechanism (automatic and manual) of variety of Rolling shutters and Collapsible shutters.

Module-4	Partitions & False Ceilings (Gypsum Board)	Construction details of Metal Stud Partition (single layer). Construction details of Suspended Ceilings.
Module-5	Water Proofing Works	Basements and Expansion joints.
Module-6	Temporary Constructions	Shoring (Raking, Flying and Needle).

CONSTRUCTION PLATES

1. To understand the application of structural steel works in buildings.
2. To understand the application of metal doors/windows in buildings.
3. To understand the operational mechanism of metal shutters in buildings.
4. To understand application of gypsum board in metal stud partitions and false ceilings in buildings.
5. To understand the application of waterproofing works in buildings.
6. To understand the application of temporary construction in buildings.

APPROACH

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will be construction details as applicable to Indian conditions.
- Site visits and market surveys will be an integral part of sessional work.

REFERENCE BOOKS

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

B. ARCH. SEMESTER – V
NAR – 503, ARCHITECTURAL STRUCTURES - V

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

OBJECTIVES:

- To understand the structural behavior of various structural elements
- To understand the analysis and design of R.C.C. structures and their use in building industry.
- To understand the analysis and design of Steel structures and their use in building industry.

Module-1 Structural behavior of various Structural Elements.	Understanding the structural behavior of following elements under loads and stresses and their stability e.g. Columns, Beams, Cantilevers, Portals, Arches, Vaults, Domes, Trusses, Space Frames, Folded plate, Shells, Cables and Multistory frames.
Module-2 Introduction (Limit State Method)	Understanding of Limit state, characteristic strength and characteristic load. Design values, partial safety factors, factored loads, Stress strain relationship for concrete & steel, Yield stress, Provision of IS codes, Load & load combination.
Module-3 Analysis & Design of R.C.C. Foundation & Footing (Limit State Method)	Introduction, Type of foundation, Depth of foundation, Theory & design of axially loaded isolated square footing and detailing of its reinforcement. Pile foundation - Introduction, classification and its application.
Module-4 Analysis & Design of R.C.C. Column (Limit State Method)	Introduction, Effective height of column, Assumptions, Minimum eccentricity, Analysis and design of short R.C.C. column under pure axial load as well as under axial load and bending moment.
Module-5 Analysis & Design of Steel Structure (Limit State Method)	<p>Various types of connections –</p> <p>Riveted connection - Introduction, classification, strength of riveted joint.</p> <p>Bolted connection - Introduction, classification of bolts based on type of load transfer, terminology, specifications for spacing and edge distances of bolt holes as per I.S. Code 800-2007, Types of bolted connections, Type of actions on bolts, Design strength of plates in a joint, Design strength of bearing bolts</p> <p>Welded connection - Introduction, Types of welded joints, Important specifications for welding as per IS code, Design strength of welded joints.</p> <p>Analysis and Design of various types of members –</p> <p>Tension members - Introduction, Design strength, Analysis and design of Tension member.</p> <p>Compression members - Introduction, slenderness ratio, Actual length, Effective length, Design strength, Analysis and design of Compression member.</p>
Module-6 Steel Structure	<p>Understanding of Miscellaneous Structural Elements –</p> <p>Beam and plate girder & its use in building industry.</p> <p>Grillage foundation and its' component & its use in building industry.</p> <p>Types of roof trusses and nomenclature of its members.</p>

APPROACH

1. Lectures by Experts in the field of Design and analysis will be arranged to make the student's exposure to practical aspects of design

REFERENCE BOOKS

1. Jain Ashok K, "Reinforced Concrete Limit State Design".
2. Punmia B. C., "Limit State Design of Reinforced Concrete".
3. Bhavikatti S.S., "Steel Structures By Limit State Method as Per IS: 800-2007".

B. ARCH. SEMESTER – V
NAR – 504, INTERIOR DESIGN

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

OBJECTIVES

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

Module-1 Introduction to Interior Design	Definitions related to interior design. Review of enclosing elements like walls, floors, ceilings, openings, staircases, furniture & design elements such as color, light textures in interior spaces. Principles of interior design.
Module-2 History of Interior & Furniture Design in Brief	Concise understanding of evolution from ancient to modern, post-modern ideologies to contemporary (Egyptian, Greek, Roman, Gothic, Baroque, Renaissance, Arts and Crafts Movement, Art Nouveau, De Stijl, Modernism, Post Modernism and Contemporary).
Module-3 Study of Materials, Finishes & their applications in Furniture & other Interior Elements	An in-depth understanding of the characteristics and workability of various materials used in interiors. Their classification could be on basis of elements of usage (floor, ceilings, walls, doors, windows and fabrics/upholstery) or materials based like wood, metal plastics and their variants.
Module-4 Understanding innovation in Furniture & Interior Design	Modern materials, Modular furniture, Interior landscaping, Fittings & fixtures.
Module-5 Analysis & Design of Furniture	Analyzing existing designs of selected furniture on basis of ergonomics, user type, economics, material, joinery and maintenance to ascertain their suitability. Design furniture for specific use complying with the aforementioned formulated design criteria. Build scaled models of the designed furniture for better understanding of working and materials.
Module-6 Analysis & Design of small Interior spaces	Analyse small selected interior spaces like study, bedroom, executive/ architect office, retail outlet, conference, reception & waiting lobby including toilets and kitchens in detail, for varied aspects like function, ergonomics, and materials and establishing detailed design criteria. Design of selected small interior spaces on specific sites/ locations based on formulated design criteria using modern design methodologies. Develop design details of the afore-designed projects for their furniture and finishing.

APPROACH

1. Course should be covered through lectures and seminars by the students.
2. Attempts should be made for a thorough study of materials and techniques used in interiors and their applicability.
3. Scaled models of design exercises should be encouraged.
4. Regular studio work for total grasp of the subject is essential.
5. Report making for study of furniture and craft styles in India should be done.

REFERENCE BOOKS

1. Ching, Francis D.K. Interior Design Illustrated, V.N.R. Pub. NY 1987.
2. Pandya ,Yatin. Elements of spacemaking.
3. Massey, Anne. Interior design since 1900.
4. Litchfield, Fredrick. Illustrated History of Furniture from the earliest to the present time.
5. Fiell, Charlotte and Peter. 1000 chairs

B. ARCH. SEMESTER – V
NAR – 505, ESTIMATION & SPECIFICATION

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

OBJECTIVES:

- To initiate the students into theory and practice of estimation and quantity surveying.
- To develop the understanding of specification writing.

Module-1 Specifications (Materials)	Introduction, Importance and scope. Type of specifications, Correct form and sequence of clauses for writing specifications. Study and uses of standard specifications viz; drafted by C.P.W.D. Writing detailed specifications for various building materials e.g. Bricks, Aggregates (fine & coarse), Cement, Reinforcement, Timber, Glass and Paints.
Module-2 Specifications (Items of works)	Writing detailed specifications for various items of works e.g. Earthwork in foundation, Cement concrete, Reinforced cement concrete work, Brick work in cement mortar, Damp proof course, Wood works (door & windows), Glazing, Plastering (cement and sand), Flooring (cement concrete & tiles), Distempering (dry & oil bound), Painting on wood & iron work, Water proof cement painting, Brick bat coba terracing.
Module-3 Estimation	Introduction, Importance and scope. Types of estimates – Preliminary, Plinth area, Cubical content, Approximate quantity, Detailed / Item rate method estimates. Methods of Estimation – Separate / individual wall, Centre line methods of estimation.
Module-4 Estimation Exercises	Exercises in estimation, using different methods, for small or medium size buildings.
Module-5 Rate Analysis	Labour turnout and norms of consumption of basic materials. Principles of analysis of rates, Market / DSR rates of labour and materials. Exercises for rate analysis of various items of works mentioned in Module – 2.
Module-6 Accounting Procedures	Introduction to P.W.D accounts procedure, measurement book, daily labour, muster roll, stores, stock, and issue of material from stock, indent form, imprest account, cash book, mode of payment.

LIST OF ASSIGNMENTS

1. To study the various types of estimates.
2. To prepare detailed estimate for a small building.
3. To study the importance and correct form of writing specifications.
4. To prepare detailed specifications for various items.
5. To study the principles of analysis of rates and prepare analysis of rates for various items of work.
6. To understand the Standard accounts procedure and record keeping.

APPROACH

- The course would be covered through lectures and tutorials.
- The students' seminars will help realize the grasp on the subject matter.

REFERENCE BOOKS

1. Dutta, B. N. (2003) *Estimating and Costing*, UBS Publishers
2. Birdie, G. S. *Estimating and Costing*
3. Chakraborti, M. *Estimation, Costing and Specifications*, Laxmi Publications
4. Kohli, D.D and Kohli, R.C. (2004) *A Text Book of Estimating and Costing*, S.Chand & Company Ltd.
5. Brook, Martin. (2004) *Estimating and Tendering for Construction Work*, 3rd edition, Elsevier.
6. Ashworth, A. (1999) *Cost studies of buildings*, Pearson Higher Education

7. Buchan, R., Grant, F. and Fleming, E. (2006) *Estimating for Builders and Quantity Surveyors*, 2nd edition, Butterworth-Heinemann
8. Cross, D.M.G. (1990) *Builders' Estimating Data*, Heinemann-Newnes
9. McCaffer, R. and Baldwin, A. (1991) *Estimating and Tendering for Civil Engineering Works*, 2nd edition, BSP
10. Sher, W. (1997) *Computer-aided Estimating: A Guide to Good Practice*, Addison Wesley Longman
11. (2004) *Standard Handbook for Civil Engineers*, McGraw-Hill
12. Standard Schedule of Rates for Delhi, CPWD & UPPWD.
13. Standard Specifications, CPWD & UPPWD
14. I. S. 1200 Parts I to XXV – Method of Measurement of Building and Civil Engineering Works, Bureau of Indian Standards
15. National Building Code of India (Latest Edition), Bureau of Indian Standards.

B. ARCH. SEMESTER – V
NAR – 506, ARCHITECTURAL SERVICES – IV (AIR CONDITIONING SYSTEMS & LIFT SERVICES)

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

OBJECTIVES

- To develop an understanding of the advanced building services such as Air conditioning and lifts and their application in the design proposals of buildings of slight complex nature such as multistoried.
- The thrust shall be on understanding the use and application of the services and not the calculation or numerical part.

SECTION – A, AIR CONDITIONING SYSTEMS

Module-1	Introduction & Principles	Fundamentals of Air Conditioning System Design. Building Plans, Drawings, and Schematics.
Module-2	AC systems	Refrigeration Cycle, Psychometric chart, Cooling load for air conditioning. Comfort cooling systems & their working- Unitary air conditioning- window ac & split ac. Package ac system. Evaporative cooling systems.
Module-3	Air Distribution Systems	Central air conditioning their parts - A.H.U., Cooling plant, Cooling tower. Air Distribution Systems - fans, filters, fan coil units, ductwork, outlets, dampers.

SUGGESTED EXERCISES

- Site visits of buildings where different types of Air-conditioning systems have been installed, their working and the merits and demerits of the system.
- In an already designed project of a large covered area & multi-storeyed building installation of an air-conditioning system and the location of their parts and how they will be connected.

SECTION – B, LIFT SERVICES

Module-1	Introduction & Principles	Fundamentals of lift services System Design. Building Plans, Drawings, and Schematics. Definitions regarding lifts such as average travel lift carrying capacity, rated load, rated speed, RTT etc. Grouping of lifts and design standards of a lift lobby.
Module-2	Lift Types	Types of Lifts. Working of lifts with details of lift section describing various parts of lifts.
Module-3	Escalator	Types of Escalators. Fundamentals of escalators, Function and working of Escalators

SUGGESTED EXERCISES

- Site visits of buildings where different types of lifts & escalators have been installed, their working and the merits and demerits of the system.
- In an already designed project of a large covered area & multi-strayed building installation of these systems and the location of their parts and how they will be connected.

APPROACH

- Specialized lectures from technical people in the field.
- Practical and site based exercises to make the data more comprehensive.

REFERENCE BOOKS

1. Mitchell's Building Construction: Environment & Services, Peter Burberry, 8th Edition, 1997, Longman
2. Mechanical and Electrical Equipment for Buildings, B. Stein and J. Reynolds, 10th Edition, 2005, Wiley & Sons Inc
3. The Building Systems Integration Handbook, R Rush, 1991, American Institute of Architects

4. Building Services: A Guide to Integrated Design: Engineering for Architect, RP Parlour, 2008, Integral Publishing
5. Understanding Buildings: A Multi-disciplinary Approach, E Reid, MIT
6. William H. Severns and Julian R. Fellows, "Air-conditioning and Refrigeration", John Wiley and Sons, London, 1988.
7. A.F.C. Sherratt, "Air-conditioning and Energy Conservation", The Architectural Press, London, 1980.
8. ASHRAE Publications
9. National Building Code of India (Latest Edition), Bureau of Indian Standards.

B. ARCH. SEMESTER – V
NAR – 507, HISTORY OF ARCHITECTURE – IV

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

OBJECTIVES

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

Module-1 Introduction

Introduction and understanding of ‘Islam’s’ philosophy and its consequent rituals and their interpretation in building type e.g. mosque, tomb, fort and their elements like domes, minarets, arch, squinch, landscape, motif, calligraphy, directionality, symmetry, geometry, material, court, water, patterns etc.

Module-2 The Sultanate Style

The architecture of early Islamic dynasties that ruled from Delhi like the Slave, Khalji, Tughlaq, Sayyid, Lodhis and ShershahSuri regimes. The formation of ‘Indo-Islamic’ style that was the amalgamation of Islamic space and prevalent Hindu techniques of building and materials.

Module-3 Provincial Architecture

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

Module-4 Cities and Citadels

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

Module-5 Mughal Architecture

The architecture of the Timurids in India-Babur, Hamayun, Akbar, Jahangir and Shahjahan, which was the culmination of the Indo-Islamic paradigm. The proportions, structure systems, landscape, materials, scale and distinct features.

Module-6 The Later Moghuls

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

Module-7 Colonial Architecture

The British architecture of the colonial days in India- the capitol at Delhi and the residency at Lucknow emphasizing on their planning criteria and architectural features. Incorporation of local motifs and materials.

APPROACH:

1. Lectures to be specifically conducted with the visual aids and seminars presented by students.
2. Students will make written assignments and seminar presentations on architectural characteristics that identify the building types and the intentions of the period in response to context and time.
3. Free hand sketches and orthographic drawings could made by students in the tutorials on specific building examples to familiarize them with the architectural character that identify the works of the particular period.
4. Scaled, sectional models of historical buildings to be encouraged to understand the scale and proportion.

REFERENCE BOOKS

1. Percy Brown, “Islamic Architecture.”
2. Jown’d Hoag, “Islamic Architecture (History of World Architecture)”, 2004.
3. Rober Hillenbrand “Islamic Art and Architecture” Tames and Hudson.
4. Rober Hillenbrand, “Islamic Form Function and Meaning”.
5. Adam Barkman, “Making Sense of Islamic Art and Architecture”, Tames and Hudson.
6. Tadgell, “World Architecture”.

B. ARCH. SEMESTER – V
NAR – 508, RESEARCH - IV

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

OBJECTIVES

- Understanding basic principles of any research with special reference to architectural research and applications.
- To understand the basic methodology of writing a technical paper.
- To be able to write a technical paper of about 2000 words.

Module-1	Introduction	Anatomy of a technical paper- parts of a technical paper; its chronology.
Module-2	Technical Writing	Intent of the paper. Structuring the paper; formulating a synopsis. Identifying sources- categorization into direct and indirect; sequencing them in order of significance. Referencing.
Module-3	Writing a Technical Paper	Writing a paper of 2000 words in following stages: Synopsis with clear heads of Intent, Background, Aims and Objectives, Scope, Methodology. Structuring the body of the paper in detail. Ascertaining Primary and Secondary Sources. Utilizing the sources to reach to the desired objectives. Editing the paper.

LIST OF ASSIGNMENTS

1. Writing a paper of 2000 words. This should be broken down stage wise and a feedback be given at every stage.

REFERENCE BOOKS

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

B. ARCH. SEMESTER – V
NAR – 509, DISASTER MANAGEMENT

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	10	15	25	25	0	25	50	2	3 HRS.

OBJECTIVES

- To make the students understand the disaster management cycle.
- To create awareness about natural disasters, factors that cause them, and to foster knowledge about strategies for disaster prevention and management.
- Overview of major natural disaster through case studies.
- Their role in design & planning solutions, for reduction of risk and damages caused.

Module-1 Introduction to Hazards & Disasters	Introduction to disaster management, Indian scenario, Understanding of disaster, Hazard and its classification, Vulnerability, Capacity, Risk. Various types of disasters. To understand in detail for the causes, adverse effects, distribution patterns, mitigation measures of Earthquake, Tsunami, Cyclone, Flood and Landslide. Disaster management cycle.
Module-2 Case Studies	Studies to understand above mentioned disasters (National as well as International) occurred in past and their inferences.
Module-3 Disaster Preparedness	Disaster Management Act, Guidelines, NDMA. Vulnerability Assessment & Warning systems for above said disaster types.
Module-4 Disaster Response	Programmes and strategies for disaster reduction. Communications.
Module-5 Disaster Mitigation	Pre disaster, emergency, transition, and recovery. Disaster management plan, Natural crisis management committee, State crisis management group.
Module-6 Disaster Resistant Construction Techniques	Risk reduction measures through land use control, site planning and land management, design and construction of structures for above mentioned disasters.

REFERENCES:

1. Building Configuration and Seismic Design-Christopher Arnold.
2. Structural failures in Residential Buildings- Frich Schild & Others.
3. Handbook of Planning security Planning & Design-Peter S. Hopf.
4. S. Rajagopal – Problems of housing in cyclone prone areas – SERC, Vol.2 , Chennai, 1980.
5. Office of the UN Disaster Relief Co-ordinator – Disaster prevention and mitigation, Vol 12, Social and Sociological aspects – UNO, NY, 1986.
6. F. C. Cony et.al – Issue and problems in the prevention of disaster and housing – A review of experiences from recent disasters – Appropriate reconstruction and training information centre, 1978.
7. S. Ramani, Disaster management – Advanced course on modern trends in housing – SERC, Vol 2, Chennai, 1980.

B. ARCH. SEMESTER –VI
NAR – 601, ARCHITECTURAL DESIGN - VI

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	7	30	70	100	75	25	100	200	9	6 + 6 HRS.

OBJECTIVES

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

Module-1	Introduction	Acquainting with the various ways of designing a group housing in urban context i.e. low/medium rise- high density, high rise- high density etc.
Module-2	Study and Analysis	Through literature studies and case studies analyze the constraints, typologies and interventions in housing throughout India and the rest of the world.
Module-3	Design Proposal	Design of a housing project incorporating varied formats of grouping on an actual site with specific bye-laws and regulations.
Module-4	Integration of Services and Structure	Development of the housing proposal to the stage integrating services, structure and other infrastructural facilities necessary for the final execution of the project and making relevant drawing for the same.
Module-5	Working Drawing	<p>Making complete set of working Drawings and Details for the residence or any other project designed by the students. The drawings to also incorporate electrical and plumbing details complete with schedule and all specifications. The Working Drawings and details to include -</p> <p>Site Plan.</p> <p>Trench Plan with Foundations Details (showing grid lines, if required).</p> <p>Ground, First and Terrace Floor Plans.</p> <p>Sections, preferably through Staircase and Toilet.</p> <p>Elevations.</p> <p>Doors and Windows (Frames & Shutter Details).</p> <p>Electrical Layout Plan with specifications.</p> <p>Toilet Details showing all fixtures and gadgets, Wall elevations & Floor plan to show tile pattern, Internal Plumbing and Sanitary Layout Plan.</p> <p>Kitchen Details showing all fixtures, Flooring & Wall elevations to show tile pattern and counter details, Internal Plumbing and Sanitary Layout Plan.</p> <p>Plumbing and Sanitary Layout Plan of total site.</p> <p>Flooring pattern Plan (internal and external areas, steps etc.).</p> <p>Staircase and Railings Details.</p> <p>Details of Window Grills, Gates, Jaals, Pergolas, Parapets.</p> <p>Typical wall section showing foundation, DPC, floor, sill, lintel / beams slab, projections, terracing, parapet details.</p>

SUGGESTED STUDIO EXERCISES

1. Design of group Housing in varied formats with diverse bye-laws and regulations.
2. Complete set of working drawings as suggested above for a medium sized project.

REFERENCE BOOKS

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

3. Correa, Charles, "The New Landscape",
4. Joglekar & Das, S.K, "Contemporary Indian Architecture: Housing and Urban Development", HUDCO, 1995
5. Rewal,Raj, "Humane Habitat at Low Cost", Architectural Research Cell, 2000.
6. Steele, James, "The Complete Works of Balakrishna Doshi: Rethinking Modernism for the Developing World", Super Book House, Mumbai, 1990.

B. ARCH. SEMESTER –VI
NAR – 602, CONSTRUCTION & MATERIALS –VI

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	75	50	25	75	150	6	3 HRS.

OBJECTIVES

- To introduce and familiarize the students with constituents, manufacturing process/availability, properties/characteristics, defects, classifications and uses of building materials used in construction;
- To understand the use of these building materials in building works.
- To introduce and familiarize the students with the various temporary construction works required for RCC construction works.
- To understand the use of the metal/PVC doors/windows in existing and new construction.
- To familiarize the student with the building construction practices on site.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1	Plastics and Rubbers	Thermoplastics - Polythene, Polyvinyl chloride, Poly-propylene, Polymethyl methacrylate, Acrylonitrile butadiene styrene. Thermosetting Plastics – Phenol formaldehyde, Urea formaldehyde, Melamine formaldehyde, Polyurethanes, Silicon resins. Rubber.
Module-2	Metals (Non-Ferrous)	Non ferrous – Copper & Copper based alloys (Brass & Bronze), Tin, Cadmium, Chromium, Zinc, Lead and Nickel. Metal Coatings – Electroplating, Anodizing.
Module-3	Additives & Admixtures	Various additives and admixture – Cementitious (crystalline) systems, Integral systems, Proprietary systems, Cementitious Coating systems.
Module-4	Construction Equipments	Electric hand tools, Vibrators, Pumps, Compactors/Rollers. Earth Moving & Excavation – Dozers, Scrapers, Graders, Shovels, Backactor, Dragline, Trenchers. Transportation – Lorries, Trucks, Dumpers, Hoist, Cranes (mobile, static, tower). Concrete mixers and pumps for ready mix concrete.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

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

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-5	Workshop/Constructi on Yard Practice	Practicing in construction yard by making the examples of components covered under ‘Building Construction Technology’.
Module-6	Site Exposure	Exposure to advanced building construction practices on site of various items of work from foundation to roof and finishes.

LIST OF ASSIGNMENTS

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

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-1	Doors & Windows (P. V. C.)	Doors Frames and Shutters. Windows Frames and Shutters.
Module-2	Doors , Windows & Partitions (Aluminium)	Doors Frames and Shutters. Windows Frames and Shutters. Partitions Framework & fixing with other suitable materials.

Module-3	R.C.C. – I (Formwork & Laying)	Foundations - Isolated, Combined, Cantilever, Eccentric footing, Grillage and Raft foundation, Pile foundations – details of pile, varieties of piles, pile caps.
Module-4	R.C.C. – II (Formwork & Laying)	Understanding of steel reinforcement types, laying, bending and binding. Columns, Lintels, Projections/Chujjas and Beams.
Module-5	R.C.C. – III (Formwork & Laying)	Understanding of steel reinforcement types, laying, bending and binding. Slabs - Simply supported, Continuous & Cantilevered.
Module-6	Temporary Constructions	Staircases - Waist and Folded slab. Understanding of steel reinforcement types, laying, bending and binding. Centering, Shuttering and scaffolding.

CONSTRUCTION PLATES

1. To understand the application of PVC Doors and Windows.
2. To understand the application of Aluminium Doors, Windows and partitions.
3. To understand the construction of RCC Foundations along with its' steel works.
4. To understand the construction of RCC Columns, Lintels and Beams along with its' steel works.
5. To understand the construction of RCC Slabs and Staircases along with its' steel works.
6. To understand the application of temporary construction in buildings.

APPROACH

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will be construction details as applicable to Indian conditions.
- Site visits and market surveys will be an integral part of sessional work.

REFERENCE BOOKS

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

B. ARCH. SEMESTER – VI
NAR – 603, ARCHITECTURAL STRUCTURES - VI

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

OBJECTIVES

- To understand the analysis and design of R.C.C. structures and their use in building industry.

Module-1	Introduction to Shear and Development Length in Beams.	Understanding of Shear stress, Diagonal tension, Shear reinforcement, Spacing of shear reinforcement, Problems of shear reinforcement, Development length, Anchorage bond, Flexural bond.
Module-2	Analysis & Design of R.C.C. Beam (Simply Supported & Cantilevered). (Limit State Method)	Analysis & Design of R.C.C. singly reinforced & doubly reinforced rectangular and flanged (L & T) beam sections.
Module-3	Analysis & Design of R.C.C. Beam (Continuous). (Limit State Method)	Analysis & Design of R.C.C. continuous Beam.
Module-4	Analysis & Design of R.C.C. Flat Slab. (Limit State Method)	Analysis & Design of R.C.C. flat slab.
Module-5	Analysis & Design of R.C.C. Cantilever Retaining Wall (Limit State Method)	Introduction, Type of retaining walls, Analysis & Design of Cantilever retaining walls and detailing of its reinforcement.
Module-6	Analysis & Design of R.C.C. Stairs (Limit State Method)	Introduction, Types of stairs, Effective span of stairs, Loading on stairs, Analysis & design of stairs (dog legged with waist slab) and detailing of its reinforcement.

APPROACH

- Lectures by experts in the field of design and analysis will be arranged to make the student do independent design of structural elements.

REFERENCE BOOKS

- Jain Ashok K, "Reinforced Concrete Limit State Design".
- Punmia B. C., "Limit State Design of Reinforced Concrete".

B. ARCH. SEMESTER – VI
NAR – 604, LANDSCAPE DESIGN

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

OBJECTIVES

- To make students aware of plant-scape around them
- To encourage hand drawing & drafting in landscape presentation drawings
- To familiarize students in preparation of simple landscape proposals.

Module 1 Introduction to Landscape Architecture	Role and scope of Landscape Architecture, Understanding its relationship with earth, water, fire, air, ether/space. Factors affecting landscape design like Climatic/Natural conditions - (soil, water, landforms, vegetation, temperature, humidity, rainfall), Scale, Material, Cost, Time. Elements of Landscape Design - Natural elements (Landform, water, plantscape, microclimate), Design elements (man-made water bodies, landscape furniture, lighting, hardscape and softscape) Principles of Landscape Design - Unity, Symmetry, Balance, Hierarchy, Repetition, Sequence with suitable examples.
Module 2 Landscape Graphics	Techniques on making handmade landscape drawings - trees of varied textures, landforms, buildings, paving, foliage patterns, tone contrast, & balance, rock & water and other landscape features. Conventional symbols in landscape presentations.
Module 3 Concise Theory And Evolution Of Landscape Architecture	Evolution of landscape from pre- history to present day (history of landscape through civilizations). Major Garden styles - Hindu, Buddhist, Mughal, Japanese, Italian, Renaissance, their Design and Philosophy in brief.
Module 4 Planting Design	Classification of Plants - Trees, shrubs, groundcovers, flowering plants. Selection criteria of plants on the basis of visual, functional, micro climate and ecological aspects.
Module 5 Landscape Design	Inventory, Site analysis and Site planning. Conceptual design, Design development and proposals. Landscape constructional details paving, curbs, retaining wall, fountain, decks, terrace gardens etc.

APPROACH

- Emphasis would be in drawing in studios
- Site-visits to botanical gardens, existing parks & urban spaces

SUGGESTED STUDIO EXERCISES

1. Design and presentation of Traffic islands, Small residences, Offices, Canteen etc.

REFERENCE BOOKS

1. Geoffry& Susan Jellicoe: landscape of Man: shaping the environment from pre-history to the present day.
2. Brian Hackett: planting design
3. Nick robinson: planting design handbook.
4. Ian Mcharg: Design with nature
5. Simonds: landscape architecture
6. Jay Applaton: Experience of Landscape
7. Paul Bannet: The language of Landscape
8. SimondSwaffield: Theory in Landscape Architecture

9. Pradip Krishen: Trees of delhi
10. Tropical gardens of india
11. Website <flowers of india>
12. Software tukai: exotic plants of pune

B. ARCH. SEMESTER – VI
NAR – 605, BUILDING BYE - LAWS

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

OBJECTIVES

- To study the master plan and development controls as applicable to building design.
- To acquaint the students to compulsory building bye-laws and permits.
- To understand design limitations due to authority guidelines.

Module-1	Introduction to Building Bye Laws	Introduction to building bye laws and regulation, Need and relevance, General definitions such as building height, building line, FAR, Ground Coverage, Set Back Line. Role of various statutory bodies governing building works like development authorities, municipal corporations etc. Introduction to Master Plan and understanding various land uses and related terminology.
Module-2	Development Authority	Familiarizing with Building Bye-laws through NBC & Local Development Authority, State Housing board, etc. Interpretation of the Bye Laws applicable to residence in plotted developments, Group Housings, Commercial Buildings, Educational Buildings and other Public Institutions.
Module-3	Other Authorities	Various other statutory controlling authorities e.g. Water, Electricity, Fire, Airport, Archaeology.
Module-4	BIS Codes	Introduction to various BIS codes in building industry.
Module-5	Drawings	Complete set of Submission drawings as suggested above for a medium sized project.

LIST OF ASSIGNMENTS

1. To study the importance and correct form of Building Bye-laws.
2. Submission Drawings for statutory approval from the regulating Authority.

APPROACH

- The course would be covered through lectures and tutorials.
- The students' seminars will help realize the grasp on the subject matter.

REFERENCE BOOKS

1. National Building Code of India (Latest Edition), Bureau of Indian Standards.
2. Development Authority Bye-laws.
3. Master Plan.
4. Model – Bye-laws by TCPO.
5. Various BIS Codes.

B. ARCH. SEMESTER – VI
NAR – 606, ARCHITECTURAL SERVICES – V (FIRE PROTECTION & ELECTRONIC SECURITY AND SURVEILLANCE SYSTEMS)

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

OBJECTIVES

- To develop an understanding of the advanced building services such as Fire Protection and Security and their application in the design proposals of buildings of slight complex nature such as multistoried.
- The thrust shall be on understanding the use and application of the services and not the calculation or numerical part

SECTION – A, FIRE PROTECTION

Module-1 Introduction

Causes and spread of fire.
 Fire triangle/tetrahedron. Classes of fire.
 Combustibility of materials and fire resistance.
 Building Plans, Drawings, and Schematics.

Module-2 Fire Detection & Alarm Systems

Fire Detection Equipments - Heat and Smoke sensors.
 Fire Alarm Systems.

Module-3 Fire Fighting & Extinguishing Techniques

First stage fire fighting equipment, Ladders, Snorkel Ladder.
 Fire fighting pump and water storage, Hose and hose fittings, Dry and wet risers, Automatic sprinklers.
 Fire Extinguishers - Portable fire extinguisher and other fire fighting equipments.
 Means of escape, Fire escape, Fire doors, and Water curtains.

SUGGESTED EXERCISES

- Site visits of buildings where different types of Fire protection equipments have been installed, their working and the merits and demerits of the system.
- In an already designed project of a large covered area & multi-strayed building installation of these systems and the location of their parts and how they will be connected.

SECTION – B, ELECTRONIC SECURITY AND SURVEILLANCE SYSTEMS

Module-1 Perimeter Protection, Intrusion Detection & Alarm Systems

Perimeter protection - Barriers, Doors, Gates, Turnstiles and Fences.
 Intrusion Detection Sensors and Alarm Systems - Outdoor & Indoor.
 Building Plans, Drawings and Schematics.

Module-2 Access Control

Introduction to Access Control Systems, Locks & Emergency Exits.
 Visitor Management Systems.

Module-3 Surveillance & Recording System

Identification Systems - PIN, Card, Wireless systems, Biometric Systems.
 Components of Basic Systems.
 Security Lighting, Illumination including Infra-red.
 Understanding CCTV cameras - Pan, Tilt & Zoom mechanisms.
 Recording Systems - Digital and Analog Recording.

APPROACH

- Specialized lectures from technical people in the field.
- Practical and site based exercises to make the data more comprehensive.

REFERENCE BOOKS

1. Understanding Building Automation Systems (Direct Digital Control, Energy Management, Life Safety, Security, Access Control, Lighting, Building Management Programs) by Reinhold A. Carlson, Robert A. Di Giandomenico
2. Building Automation: Control Devices and Applications by In Partnership with NJATC (2008)
3. Building Control Systems, Applications Guide (CIBSE Guide) by The CIBSE (2000)

4. Security/Fire Alarm Systems: Design, Installation, and Maintenance by John E. Traister (1995)
5. CCTV (Newnes) by Vlado Damjanovski (1999)
6. Security, ID Systems and Locks: The Book on Electronic Access Control (Newnes) by Joel Konicek and Karen Little (1997)
7. Integrated Security Systems Design: Concepts, Specifications, and Implementation (v. 1) by Thomas L. Norman (2007)
8. Access Control Systems: Security, Identity Management and Trust Models by Benantar, Messaoud, Springer (2005)
9. Building Automation Online by McGowan; McGowan, John J.
10. CCTV by Damjanovski, Vlado; Edition: 3 Publisher: Butterworth-Heinemann
11. CCTV for Security Professionals by Machette, Alan; Matchett, Alan R.; Butterworth-Heinemann (2003)
12. CCTV Surveillance: Analog and Digital Video Practices and Technology by Kruegle, Herman, 2nd Edition, Butterworth-Heinemann (2006)

B. ARCH. SEMESTER – VI
NAR – 607, HISTORY OF ARCHITECTURE – VI

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

OBJECTIVES

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

Module-1	Picturesque and Neo-Classical Architecture	Purity and structural honesty of antiquity preferred over ornamentation and exaggeration of Baroque. Representation of ancient Roman monuments in imaginary compositions. Archeological purism and importance of pictorial values in historical settings. Recreation of antique Roman simplicity and splendor for modern living. Study of important palaces and public buildings in Britain and France.
Module-2	Enlightenment and beginnings of Modern	Belief in creation of ‘new’ and ‘ideal’ world through return to fundamentals, ‘true’ and ‘original’ values. Romanticizing elementary geometrical forms with undecorated surfaces. Iron and glass construction for openness and lightness: Art Nouveau. Repetitive, Orthogonal, skeletal systems for horizontal and vertical expansion. Latter attempts to dissociate references to past styles.
Module-3	Modern Architecture	Social intentions and search for ideal world. Pluralism in place of past unity of styles. Search for paradigms in historical sources: It return to fundamentals and origins in geometry, nature and paradigms of technology. Expressions of construction and technology. Equating technology and progress with present. Functionalism and functional appropriateness. Thoughts and works of Frank Lloyd Wright, Walter Gropius, Le Corbusier, Mies van der Rohe, Alvar Aalto, Louis Kahn, Dutch De Stijl Italian futurists and Russian Constructivists. International style: Oversimplification of the modern Movement into functional, steel and glass, cubes. Monotonous functionalist abstractions and Modernism as a style. Disenchantment of modern cities and fall of modern Movement.
Module4	Post Modern Architecture	Post modern architecture as a revision of modern architecture and resistance to functional containers of 60’s. Objective, representational and emphasis on content. Pluralistic and differing trends.
Module-5	Post Modern – Historicism	Rooted to place and history. Regards of expression: ornaments, symbolism and context with irony and humour, exemplified through the works of James Stirling, Michael Graves, Charles Moore, Arata Isozaki.
Module-6	Neo - Modern	Disregard historical imaginary to recapture ideas for modern architecture of 20’s. Hi-tech metal abstractions of Richard Rogers, Norman Foster, showing structure and equipment as implied ornament. References of Russian Constructivists. The early works of New York Five including later works of Richard Mier as complicated, exaggerated and sophisticated revival of the modern grid and Corbusier’s geometry. Synthesis of Hi-Tech and Historicism in the works Aldo Rossi, Mario Botta, Cesar Pelli.
Module-7	Deconstructive	Narrative and representational. Sources in Russian Constructivism. Non perfection in the works of Frank Gehry, Peter Eisenman, Bernard Tschumi, Daniel Libeskind, Questioning traditional purity of form, geometry and structure.

REFERENCE BOOKS

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

**B. ARCH. SEMESTER –VI
NAR – 608, RESEARCH - V**

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

OBJECTIVES

- Understanding basic principles of any research with special reference to architectural research and applications.
- To write a technical paper of about 5000 words with original input.

Module-1 Introduction

Learning the formulation of research question or hypothesis

Module-2 Writing a Technical Paper

Writing a paper of 5000 words in following stages:

Formulation of an original research issue by ascertaining the gaps in research Synopsis with clear heads of Intent, Background, Aims and Objectives, Scope, Methodology.

Structuring the body of the paper in detail.

Ascertaining Primary and Secondary Sources.

Referencing in Harvard Style.

Utilizing the sources to reach to the desired objectives.

Editing the paper.

LIST OF ASSIGNMENTS

1. Writing a paper of 5000 words. This should be broken down stage wise and a feedback be given at every stage.

REFERENCE BOOKS

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

B. ARCH. SEMESTER –VI
NAR – 609, THEORY OF ARCHITECTURE

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

OBJECTIVE

- To provide the students a strong knowledge base of original ideas written by the architects themselves and familiarize them with the original thought processes that was instrumental in the change.

Module-1 Pre-modern

Ornament and Crime by Adolf Loos

Seven Lamps of Architecture by John Ruskin

Module-2 Modern

Towards a New Architecture by Le Corbusier

In the cause of Architecture by Frank Lloyd Wright

Module-3 Post Modern

Complexity and Contradiction in Architecture by Robert Venturi

The Architecture of a City by Aldo Rossi

Thinking Architecture by Peter Zumthor

APPROACH

Allocate books amongst students and discuss it holistically and sequentially in class. The teacher can prepare a summary as a presentation to summarize the book.

REFERENCE BOOKS

- Pattern language-Christopher Alexander
- The language of post Modern architecture –Charles Jencks
- K. Michael Hays, “Architecture Theory since 1968”
- Kenneth Frampton, “Modern Architecture; A Critical History” by, Tames and Hudson
- Colin Davies, “Thinking about Architecture and Introduction to Architectural Theory”
- Robert Venturi, “Complexity and Contradiction in Architecture”
- Le Corbusier, “Towards a New Architecture”
- Charles Jencks, “The language of Post Modern Architecture”.
- Willam Jr.Curtis, “Modern Architecture since 1900”, Phaidol
- Aldo Rossi, “ The Architecture of City”
- Robert Venturi, “ Learning from Las Vegas”
- M. Reza Shirazi, “Towards an Articulated Phenomenological Interpretation of Architecture: Phenomenal Phenomenology”.