# Scheme of Studies

**Fourth Year Seventh Semester B.Arch. (Regular)**

## (L-T-P-Cr) - Lectures-Tutorials-Practicals-Credits

<table>
<thead>
<tr>
<th>Course No.</th>
<th>SUBJECT</th>
<th>PERIODS</th>
<th>Credits (Cr)</th>
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<tbody>
<tr>
<td></td>
<td><strong>THEORY</strong></td>
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<tr>
<td>1</td>
<td>AR - 401 Professional practice I</td>
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<tr>
<td>2</td>
<td>AR - 402 Urban Design</td>
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<td>3</td>
<td>AR - 403 Advanced Services</td>
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<td>4</td>
<td>AR - 404 Design Research Method</td>
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<td>5</td>
<td>Elective-II</td>
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<td>Elective-III</td>
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<tr>
<td></td>
<td><strong>PRACTICAL/DRAWING/DESIGN</strong></td>
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<td>AR - 456 Architectural Design V</td>
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<tr>
<td>2</td>
<td>AR - 457 Advanced Building Construction &amp; Services</td>
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<td>3</td>
<td>AR - 458 Advanced Structural Design and Systems</td>
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<td>4</td>
<td>PD - 491 Extra/Co-Curricular Activities</td>
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**TOTAL CONTACT HOURS** | **TOTAL CREDITS**
12-0-24 (36) | 24+1

**FINAL EVALUATION IN GRADES**

* One hour for explanation/demonstration
** One credit to be earned through extra / co-curricular activities outside contact hours through clubs / societies & to be evaluated in Second year.

**LIST OF ELECTIVE-II**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>L-T-P</th>
<th>Cr</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>AR – 431</td>
<td>Interior Design</td>
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<tr>
<td>2</td>
<td>AR – 432</td>
<td>Construction Management</td>
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</table>

**LIST OF ELECTIVE-III**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>L-T-P</th>
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<tbody>
<tr>
<td>1</td>
<td>AR – 433</td>
<td>Appreciation of Art &amp; Architecture</td>
<td>2-0-0</td>
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<tr>
<td>2</td>
<td>AR – 434</td>
<td>Architectural Journalism &amp; Photography</td>
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</table>
## B.Arch (Regular)

### Scheme of Studies

**Fourth Year Eighth Semester B.Arch. (Regular)**

### (L-T-P-Cr) - Lectures-Tutorials-Practicals-Credits

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<tr>
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<td>AR - 410 Professional Office Training</td>
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<td>2</td>
<td>AR - 411 Community Service Oriented Project</td>
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</table>

**TOTAL CONTACT HOURS** | **TOTAL CREDITS**
--- | ---
0-0-30 (30) | 15
OBJECTIVE
To expose the students to the various problems and issues encountered in the normal course of architectural practice & teach them the methods of legal redressal. To develop understanding of the duties and liabilities of an architect along with knowledge of bye-laws that relate to the building & the environment in the Indian context.

1. ARCHITECT’S ROLE: Social Role / Social Responsibilities of Architects.
2. OFFICE: Management of an architect's office; elementary accountancy required for the same; Office set up and administration; Filling and recording of letters and drawings; Nature of partnership; registration of firm and dissolution; Practice Procedure and conduct; membership of professional organisation.
3. ARCHITECT’S REGISTRATION ACT: Code of Professional Conduct; Code relation to Architectural Competition; Architect's Services and scale of normal and partial fees; Architect's Act 1972 for registration; Copy-rights of drawings.
4. DUTIES AND LIABILITIES IN PROFESSION: Legal responsibility of architect to Employer, Government bodies and local bodies; Express and implied authority of the Architect; Architect’s relationship with the client and the contractor; Duration of liability; Consumer Protection Act 1986.
5. EASEMENTS & ARBITRATION: Definition, types of Easements, acquisition, protection and extinction of easements – Need for Arbitration, arbitration agreement, role of arbitrators, umpire etc, excepted matters, arbitral award.
6. ARCHITECTURAL COMPETITIONS & LEGISLATIONS: Regulations governing the conduct of competitions; open & closed competitions; appointment & duties of Assessors; instructions to participants; award of premium.
7. BUILDING BYE-LAWS: Comprehensive study of Building Bye-laws relating to the strength and stability of structures; bye-laws relating to light and ventilation, sanitation and Buildings; Study of special provisions in bye-laws in respect of factory and amusement buildings.

TEXTBOOKS

REFERENCE BOOKS

OBJECTIVE
The introduction to the course of Urban design enables a student to understand how architecture is related to urban design in the planning process and appreciate the nature and role of various facets of urban design in the making of the built environment and

1. INTRODUCTION TO URBAN DESIGN: Need, Role and objectives of Urban design; relationship between Architecture, Urban Design and City Planning; scope of urban design under Indian context; types of urban design projects.
2. URBAN DESIGN THROUGH HISTORY: Historical development and approach to urban design and comparative analysis of public spaces, their organization and articulation: West (Greek, Roman, Medieval and Renaissance towns); East (Vedic, temple towns, medieval and Islamic towns); colonial towns; modern Indian cities like Chandigarh and New Delhi.
3. BASIC PRINCIPLES AND TECHNIQUES IN URBAN DESIGN: Introduction to Urban design vocabulary; Grain, Texture, pattern, density, urban character etc; Design Principles: Scale and Enclosure; Urban Form: Elements, visual order and determinants: landform,
climate, symbolism, activity patterns, socio-cultural factors etc; understanding the Elements of townscape; techniques of urban design.

4. **PERCEPTION OF URBAN ENVIRONMENT:** Concepts of Imageability, Kevin Lynch’s elements of city image; Introduction to concepts that enhance the livability of communities; Public Realm; Pedestrian friendly cities; crime and the city etc

5. **URBAN STRUCTURE:** Inter - relationship between economic activities, public organization, population densities, communication systems, urban conservation and land - use; impact on urban environment; Causes and consequences of chaotic and disorderly urban environment with special emphasis to CBD.

6. **URBAN SPACES:** Types of Urban Spaces: Streets, Plazas, Precinct, Squares, spaces for residential, commercial, recreational and industrial use etc; their hierarchy; organisation and articulation of urban spaces; Urban spaces and urban activities

7. **LEGISLATIONS AND CONTROLS:** Role of legislations and controls in the built environment, types of urban controls: FAR, Incentive Zoning, TDR etc, special provisions of Town Planning Acts; Aesthetic legislations: historical development, applications, problems in implementation and enforcement.

**REFERENCE BOOKS**


<table>
<thead>
<tr>
<th>AR- 403 ADVANCED SERVICES</th>
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**OBJECTIVE**

To impart knowledge about the special service requirements of tall buildings and to create awareness about the systems, equipment and materials that are commonly employed in high rise buildings. Understanding the special systems required in mechanical, electrical and Fire safety services. The ability to design vertical transportation systems, HVAC systems and Fire protection systems in line with the various standards, building codes and safety requirements

1. **VERTICAL TRANSPORTATION** : Introduction to passenger elevator codes ; Express & Local Elevators, Sky lobbies etc.; Study of elevator equipments, control systems and spatial requirements ; Escalators and Capsule elevators ; Stairways & Ramps
2. **FIRE PROTECTION** : Designing for fire safety ; NBC ; Fire alarm systems ; Smoke detectors ; Fire fighting support systems ; Fire rating of materials ; Fire escape stairs & Safety regulations ; Lightning protection.
3. **THERMAL CONTROL SYSTEMS**: Calculation of Heating and Cooling loads ; Selection of suitable HVAC system ; Special equipments systems for heating and cooling ; Spatial requirements for HVAC plants ; Design of duct layouts etc.
4. **WATER SUPPLY** : Basic planning for water supply ; Calculation of capacity for sumps and water tanks ; Skip stage pumping etc.; Rainwater harvesting methods.
5. **SEWAGE DISPOSAL**: Sanitation arrangements in high rise structures ; Service floors ; Ducts and vertical shafts ; Waste treatment etc.,
6. **GARBAGE DISPOSAL** : In context to hotels, hospitals and multistoried residential properties

**TEXT BOOKS**


**REFERENCE BOOKS**

2. Bennetts Ian & others,"Tall building structural systems"
3. Proceedings of the council for tall buildings – vol 1
OBJECTIVE
The objective of seminar work is to train the students to prepare state of art report by assimilation of concepts/ideas on the chosen topics which could be in continuation with the earlier works in previous semesters. Students are expected to come out with more specific findings and recommendations, better innovative solutions through an extensive literature study and data collection from the field.

1. RESEARCH: Definition; Characteristics; Objectives; Research and Scientific method
2. TYPES OF RESEARCH: Descriptive vs. Analytical Research; Applied vs. Fundamental Research; Quantitative vs. Qualitative Research; Conceptual vs. Empirical Research.
3. RESEARCH PROCESS: Basic Overview, Formulating the Research Problem, Defining the Research Problem.
4. DATA COLLECTION: Observation Method; Interview Method; Questionnaires; Computer & Internet: Its Role in Research.
5. PROCESSING AND ANALYSIS OF DATA: Processing Operations; Statistics in Research; Descriptive Statistics; Inferential Statistic; Elements / Types of Analysis
6. CITATION METHODS: Foot Note; Text Note; End Note; Bibliography
7. SEMINAR: The state of art prepared on the chosen topics is studied and analyzed on the identification of areas for the research and development. Alternatively the students can also identify new topics for the seminar work which can be further developed into a thesis work in the final semester. The progress of seminar work is presented and discussed by the students periodically in the classroom environment and progress monitored continuously. The students are also encouraged to seek guidance from the experts in the related fields.

REFERENCE BOOKS
1. Montgomery, Douglas C. (2007), 5/e, Design and Analysis of Experiments, (Wiley India)

OBJECTIVE
To study the Interior Design principles and their applications in interiors. Detailed study of History, principles and elements that go into making of an interior space more aesthetic, pleasing and functional with a few projects as practical.

1. INTRODUCTION TO INTERIOR DESIGN: Definition of interior design; Interior design process; Vocabulary of design in terms of principles and elements; Introduction to the design of interior spaces as related to typologies and functions; themes and concepts; Study and design.
2. HISTORY OF INTERIOR DESIGN: Brief study of the history of interior design through the ages relating to historical context; design movements and ideas etc.; Brief study of folk arts and crafts (vernacular design in India) with reference to interior design and decoration.
3. ELEMENTS OF INTERIOR DESIGN - ENCLOSING ELEMENTS: Introduction to various elements of interiors like floors, ceilings, walls, staircases, openings, interior service elements; incidental elements etc. and various methods of their treatment involving use of materials and methods of construction in order to obtain certain specific functional, aesthetic and psychological effects.
4. ELEMENTS OF INTERIOR DESIGN— LIGHTING ACCESSORIES: Study of interior lighting; Different types of lighting their effects types of lighting fixtures; Other elements of interiors like accessories used for enhancement of interiors; Paintings, objects de art, etc
5. INTERIOR LANDSCAPING: Elements like rocks, plants, water, flowers, fountains, paving, artifacts, etc.; their physical properties; effects on spaces and design values.
6. ELEMENTS OF INTERIOR DESIGN - FURNITURE DESIGN & SPACE PLANNING: Study of the relationship between furniture and spaces; human movements & furniture design as related
to human comfort; Function, materials and methods of construction; changing trends and lifestyles; innovations and design ideas; Study on furniture for specific types of interiors like office furniture, children's furniture, residential furniture, display systems, etc.


**TEXTBOOK**


**REFERENCE BOOKS**

5. The Impulse to adorn - " Studies in traditional Indian Architecture" - Editor Dr. Saranya Doshi, Marg Publications, 1982.

**OBJECTIVE**

Construction Management is an important and invaluable to those who require knowledge on managing the construction process. Construction Management as an elective programme is designed to impart construction project management knowledge and help students to develop skill sets that enable efficient planning and execution of construction projects.

1. **THEORY OF CONSTRUCTION MANAGEMENT**: Introduction, Common Sense, Perception, Illusion and Imagination, Definition of Key Terms Used in construction Management.
2. **OBJECTIVES OF CONSTRUCTION MANAGEMENT**: Objectives and significance of construction management; Function of construction management
3. **CONSTRUCTION PROJECT**: Definition, objectives and the resources used by projects, Project Life Cycle and project life cycle phases, Project Environment, Overview of project procurement methods, Project Delivery & Production Process.
4. **CONSTRUCTION MANAGEMENT PROCESSES**: Production of a Work Breakdown Structure (WBS), Quantitative Analysis & Research Methodology,
5. **SITE ORGANISATION**: Preparation of a Construction Method, Factor influencing selection and design Site Management,
6. **PRACTICES APPLICABLE TO CONSTRUCTION PROJECTS**: scope management, communication and integration management, Construction Programme, time management, financial management, Construction Quality Management, Materials management, Risk management, health and safety, HR management, Procurement, Value Engineering, Construction Methods & Technology, Construction project Management tools.
7. **PROJECT PROCUREMENT AND BIDDING PROCESSES**: application of construction project management during the bid and award phases of project life cycle, study of various procurement guidelines such as World Bank, ADB, CPWD and MES etc, preliminary discussion on various types of international and national contract forms, contract for procurement of professional services.

**TEXT BOOKS**


**REFERENCES**

OBJECTIVE:
The course aims to equip the students to develop analytical and critical skills for looking at art and architecture. The specific objectives are: A. to develop a way of seeing, to contextualize art and understanding it as an expression of human faith, creativity and of complex social, economic, political, religious influences; to develop skills for determining the meaning/value of an art work in terms of external (aesthetic relationships) and internal links (structure) as well as its social functioning or social judgement.

1. FUNDAMENTALS OF ART: Form: Line, Colour, Texture, spatial qualities and composition; Ordering Principles: Balance, Contrast, Scale, Movement, Symmetry, Asymmetry, Centrifocal, Bifocal etc.; Content: The idea concerned with the work of art, On one hand relates to Symbolism, Iconography, Magic, Myths and allegories and Religion and rituals. On the other with representation of the social and secular life on the other
2. FUNCTIONS OF ART: as a social phenomenon, as information, as a concept oral suggestion, as education or as enjoyment. Techniques: Includes the various applications of materials for various kinds of art forms.
4. VALUES OF ART: Deals with artistic thinking in its context leading to a set of codes determining the value of an art work.
5. STYLES OF ART: as the structure of art, like Realism, Naturalism, Expressionistic or Abstraction and so on.
6. MODES OF ART: Existence of diverse branches of Art- from two dimensional art like painting to three dimensional art like sculpture to mixed media art like installations and further on to more ephemeral forms like video or digital art.
7. UNDERSTANDING ART: Understanding the Meaning of Art through the ages - decoding various layers in artwork: Pre-Modern, Modern, Post-Modern

TEXTBOOK
3. Architecture - Form, Space and Order, Francis D K Ching, Van Notstrand Reinhold, New York. 1996 (For Graphics)

REFERENCE BOOKS
2. Roger Scruton, Aesthetics of Architecture (On Style Taste Fashion essence etc)
3. Alan Colquhon, Modernity & Classical Tradition pp. 1-21

OBJECTIVE
Journalism adds realism and popularity to projects, buildings, books, researches, etc. The art of precise and genuine writing can be learnt through this course. Last but not the least photography adds a new dimension to the advertising.

1. HISTORY OF JOURNALISM: Analysis of recent historical and contemporary examples of written and journalistic criticism of architecture, including selected writings by Indian and overseas critics.
2. TECHNIQUES & THEMES: Discursive techniques, analysis of major critical themes, thematic categories in architectural writing over the past three centuries.
3. ANALYSIS OF WORKS: Works of Indian and international writers and critics will be presented and discussed. Seminars on Indian architectural writers, journalists and critics
4. INTRODUCTION TO PHOTOGRAPHY: General introduction to the art of photography; concept of color; concepts of lighting, distance, visual angle, frames; media;
5. **PHOTOGRAPHIC TECHNIQUES** : Types of camera, properties and priorities; Exposure, Aperture, Speed; Photographic films, Film processing color, black and white, printing techniques, developing.

6. **IMPORTANCE OF LENSES IN ARCHITECTURAL PHOTOGRAPHY** : Fish eye lens, wide angle, night photography, use of tripod, modes of clicking details, etc

7. **FIELD PROGRAM** : Exercise on integrating photography in architectural journalism.

**TEXT BOOKS**


**REFERENCE BOOKS**


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**AR 456**

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<th>ARCHITECTURAL DESIGN-V</th>
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**OBJECTIVE**

Design problems at urban or metropolitan scales and environment, multi-use complexes including functions such as residential, public services, industrial, commercial, transportation, cultural and civic. The focus should essentially be on an urban design exercise with emphasis on design to suit the surrounding environment in relation to both traffic and planning control. The design output should clearly indicate the application of theory of architecture, materials & structural systems, environmental sciences and behavioural sciences.

**DESIGN OF SERVICE ORIENTED BUILDING** : Design problem shall consider the above and planning shall deal with the masses in relation to conservation of spaces, transportation and multiple activities such as 3 star hotel, Motel, Beach Resort, multi-storeyed office building, etc. From this year and hence fourth students will be expected to enlarge the design brief in incorporating through research of ancillary requirements related to various functions forming part of the design problem. And the areas of various functions shall be based on data collected by the students themselves. This independent research, analysis and data collection for the design problem will form the basis to prepared them to deal with the Thesis topic to be done in 2nd Term.

**DESIGN FOR TRAVEL AND SPORTS** : Contemporary transportation terminals and stadiums are large buildings with multiple entries & exits dealing with large crowds and having multiple levels with large spans, complex services & demanding environmental conditions. Function, convenience and security will become the basic design parameters. Ex. Bus terminal / Railway station / Indoor sports complex /Aquatic complex etc.

**REFERENCE BOOKS**

1. *Time saver standards for building types*, DeChiara and Callender, Mc Graw hill company
2. *Neufert Architect’s data*, Bousmaha Baiche & Nicholas Walliman, Blackwell science ltd

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**AR 457**

<table>
<thead>
<tr>
<th>ADVANCED BUILDING CONSTRUCTION AND SERVICES</th>
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**OBJECTIVE**

To create an insight of the latest and advanced modern building construction typologies which will be more relavent at the professional level

1. To study Combined and Eccentric footing, raft foundations, pile, foundations, details of pile and pile cap shi pilling and diaphragm wall in timber, R. C.C. and Steel, Basement, foundation and methods of water proofing.
2. To study flat slab diagonal and rectangular ribbed floor hollow floors, reinforced brick floors.
3. To study Canopies and Balconies – Canopies for office buildings In R.C.C. & steel
4. To study counters of various types for enquiry, bar and bank, jewelers showroom, Built- in ward robe
5. To study office furniture and details-computer workstation, executive’s cabin.
6. To study Steel trusses, saw tooth roof truss with north light glazing, simple trusses in steel, and types of connections – to foundations, steel stanchion, and beams
7. To study space frames, single, double & triple layered tubular space frames with globe connections,
8. To study collapsible gate, entrance gate, rolling shutter.
9. To study prefabricated Housing construction – Methods of prefabrication of components of a Building and their assembly, details at jamb, chowkhat, skirting & slab.
10. To study mezzanine -Its structure and details with steel girders

TEXT BOOKS
1. W.B. Mickay – Building construction Vol 1, 2 and 3 – Longmans, UK 1981.

REFERENCE BOOKS
1. Dr.B.C.Punmia – Building construction
2. R.Chudley, construction Technology.

AR 458 | ADVANCED STRUCTURAL DESIGN AND SYSTEMS | L T P | Cr
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0 0 4 | 2

OBJECTIVE
To introduce the basic concepts of Space Frames, Shells and folded plates and Tensile structures. By the end of the course the student shall be capable of designing Shells and Space Frames. No detailed design but overall understanding of systems and factors is required. Further he shall have sufficient knowledge to suggest appropriate shells and folded plates and tensile structure for the space coverage.

1. SHELLS : General Understanding of shell behavior, Historical Perspective and Modern day use, Thick and Thin shells, Membrane Stresses in Thin shells, Geometry of shell, Meridien stress.
2. FOLDED PLATES : General Understanding, Folded Plate as a form active system,
3. DESIGN OF FOLDED PLATES : Design of Cross sectional dimensions of folded plates, Ferro Cement as a material for folded plate construction, Examples of Modern use
4. VIRENDEL GIRDERS : General Understanding as an architectural/structural element,
5. DESIGN OF VIRENDEL GIRDERS : design of Cross Sectional dimensions of Vierendrel Girder, Examples and Modern Day Use
6. TENSILE STRUCTURES : Tensile Structures, Principles /Understanding of General Structural Behaviour, Calculating Sag and Cross Sectional area of cables, Cable suspended and Cable Stayed Structures.
7. SPACE FRAMES : General Understanding, Space structures against Plain Structures, Examples

TEXT BOOKS

REFERENCE BOOKS
2. Publishers, New Delhi, 1998

PD - 491 | EXTRA / CO-CURRICULAR ACTIVITIES | L T P | Cr
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0 0 2 | 1

OBJECTIVE
To help the students in their all round growth and acquire attributes like team spirit, organizational ability, leadership qualities, etc.

**OPERATION**
1. The students are to take part in Extra / Co-curricular activities, NASA outside contact hours through clubs / societies etc
2. The students’ performance will be evaluated in the second year.
3. Students are required to register in each year for this course.