

L J School of Architecture

L. J. K. University

Syllabus for Bachelors of Architecture.

Third Year | Semester 5

Subject Code: 1001501|Subject: Architectural Design Studio V| Credit: 14

Focus:

- This course explores approaches to the institutional design process in terms of: Environmental Concerns, Energy Efficiency, Client Contact, Active – Passive User group, Integration of space, structure-materials-construction-services, Part-Whole relationships character.

Course Content:

- Understanding the character of institutional architecture in terms of scale, proportion, hierarchy of spaces, circulation, building language etc.
- Idea of an Institutional image/character, Ordering Theme / Idea / Concept
- Diversity of user groups, User group needs and client requirements.
- Influence of culture.
- Organization and disposition of spaces.
- Relationship of different functional, service and movement areas, circulation routes.
- Climatic considerations.
- Building material selection and technology.
- Structural aspects.
- Site planning/layout/zoning/circulation, Landscaping.

Methodology:

- Lectures, Studios, Study tours, Measure drawings, documentation, presentation, group work.

Reference:

- Design Strategies in Architecture, Edited by Geoffrey Baker
- Responsive Environment, Cutler & Cutler
- A Pattern Language by Christopher Alexander
- Scale in Architecture, Frank Orr
- Lateral thinking by De Bono, Edward
- Architecture: Scale and Proportion by Ruskin, Eugene
- Space, Time and Architecture, S. Giedion
- Analysis of Form, Le Corbusier & Baker

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Subject Code: 1001502 | Subject: Building Construction Techniques - V | Credit: 06

Course Content:

- Materials: Steel & Concrete – RCC Elements, PCC Elements, Precast Elements.
- Introduction to advance shallow and deep foundations.
- RCC Column foundation: Retaining walls, raft, pile foundations, cantilever and combined footing.
- Introduction to footings for steel columns.
- Different types of slabs and vaults.
- Introduction to structural steel and rolled steel sections.
- Conceptual study of general connections – Beam to beam connections – Beam to column connections – column to column connections – column to foundation connection.
- Concept of built up beams and columns – recommended uses. Concept of lacings, battening & importance of bracings.
- Introduction to HVAC – Understanding the concept and functioning of the HVAC.
- Concept of Elevators & Escalators and their types.

Methodology:

- Lectures, Studios, drafting, case-studies, sketching, Site visit, Model making, presentation, group work.

Reference:

- Building Construction, N. K. R. Moorthy
- Building Construction, Ramanathan
- Building Construction, B. C. Punmia
- Design of Steel Structures, Arya & Ajmani

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Subject Code: 1001503 | Subject: Structure V | Credit: 02

Course Content:

- **Introduction:** Mechanical properties of Structural Steel, Structural Sections- rolled beams, channels, angles, etc. Loads & load combinations, Methods of Analysis, Codes & specifications, Design Philosophies - Working stress.
- **Types of connections (Rigid and pinned connection):**
Bolted Connections- Definition of riveted joints, rivet strength and capacities, Design of Bolted Connections.
Welded Connections - Weld shapes, types and symbols allowable stresses in weld material, Fillet and Butt weld, Design of Welded Connections.
Design of simple connections such as lap and butt joints, truss joint connections.
- **Axial force design:** Tension member- types of tension member, behavior, modes of failure, Slenderness ratio. Analysis and design of axially loaded tension member made up of angle section, splices, Lug angle.
Compression member- behaviour, classification of sections, possible modes of failure, elastic buckling of slender member, design of compression member having single & built-up section. Importance of bracing: Objectives of lacing, single lacing, double lacing, IS-800-2007 requirement for lacing system. Objectives of batten. IS-800-2007 requirement for battening system. Columns with lacing and battens.
- **Design for Beams and Beam-Columns:**
Type of sections, classification, Lateral stability, Design strength of laterally restrained and unrestrained beams, shear strength, deflection, web buckling & crippling, Design of simply supported beam. Combined axial and flexural design of member (Beam-Column).
- **Design of Footing:** Introduction to footings for steel columns, Slab based and gusseted based.
- **Conceptual study of general connections:** Beam to beam connections, Beam to column connections, Column to column connections, Column to foundation connection.

Reference:

1. N.Subramanian; Steel Structures, Oxford Publication
2. Arya A.S. & Ajamani J.L.; Design of Steel Structures; Nemchand & Bros., Roorkee
3. Dayaratnam P.; Design of Steel Structures; Wheelor pub. co., Delhi
4. Ramamrutham S. & Narayanan R.; Design of Steel Structures; Dhanpatrai & Sons, Delhi
5. S. S. Bhavikatti, Design of Steel Structures: By Limit State Method as Per IS: 800-2007, I K International Publishing House Pvt. Ltd
6. IS 800:2007, General Construction In Steel - Code of Practice, Bureau of Indian Standards, New Delhi.
- 7 IS: 875 (Part I to V) - Code of practice for structural safety of Buildings Loading standards

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Subject Code: 1001504 | Subject: History of Architecture III | Credit: 02

Course Content:

- **Development of Western Art and Architecture:** Early Christian, Byzantine, Romanesque, Gothic. Suitable examples of these styles to be discussed in context of their period, geographical / climatic conditions, economic and political conditions, social and religious customs, construction and technology, building material and structure. Suggested examples: St. Clemente(Rome), St. Peters Old (Rome), Santa Constanza, Santa Maria Maggiore, Galla Placidia (Ravenna), San Vitale(Ravenna), Hagia Sophia, Church of Holy Apostles (Athens), San Antonino (Italy), Abbaye-aux-Hommes (France), Pisa Cathedral, Speyer Cathedral (Germany), Notre Dame Cathedral(Paris), Milan Cathedral (Italy), Westminster Abbey (London), St. Stephen's Cathedral (Vienna) etc.
- **Developments in Europe after medieval period:** Renaissance, Baroque, Rococo. Their influences worldwide. Suitable examples of these styles to be discussed in context of their period, geographical / climatic conditions, economic and political conditions, social and religious customs, construction and technology, building material and structure. Suggested examples: St. Peter's Basilica, San Lorenzo Basilica (Florence), Basilica of Santa Maria Novella (Florence), Medici Palace(Florence), Palazzo Farnese (Rome), Santa Andrea Basilica (Mantua), Tempietto, Sistine Chapel, Villa Rotunda, St. Paul's (London), The Château de Fontainebleau (France) , Church of the Gesu, San Lorenzo (Turin), Versailles Palace (France), Czapski Palace, Warsaw etc.
- **Colonial architecture in India:** Influences from abroad, Architectural developments during main European colonial powers like British, French, Dutch, and Portuguese in context of their period, geographical / climatic conditions, economic and political conditions, social and religious customs, construction and technology, building material and structure. Features of Indo-Saracenic architecture with suitable examples. Suggested examples: Victoria Memorial, Madras high court, Calcutta high court, National library of India, Viceroy lodge (Shimla), Basilica of Bom Jesus, Se Cathedral, Dutch cemetery (Ahmedabad), French colonial architecture of Villa Blanche, Pondicherry etc.

Reference:

- History of Architecture, Sir Banister Fletcher, Architectural Press
- Splendours of Imperial India: British Architecture in the 18th and 19th centuries, Andreas Volwahn, Prestel Publishing
- History of Modern Art: Painting, Sculpture and Architecture, H. H. Arnason and Elizabeth C. Mansfield
- Encyclopedia of Architecture, Joseph Gwilt
- A History of Architecture: Settings and Rituals by Spiro Kostof
- Architecture: "Gothic and Renaissance" by Thomas Roger Smith

- The Architecture of the Italian Renaissance By Peter Murray
- A Global History of Architecture by Francis D.K. Ching, Vikramaditya Prakash, Mark Jarzombek
- Early Christian and Byzantine Architecture (The Yale University Press Pelican History of Art) by Richard Krautheimer
- Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture By Ross King
- World Architecture: The Masterworks By Will Pryce
- Andrea Palladio: The Four Books on Architecture
- World Architecture: The Masterworks By Will Pryce
- The Story of Western Architecture by Bill Risebero

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Subject Code: 1001505 | Subject: Building Regulations - II | Credit: 02

Course Content:

- Brief Introduction to town planning process: DP, DCR and TP schemes. Study of historic and contemporary examples of the town planning processes. Discussions on desirable outcome of these processes and policies.
- Building regulations related to performance of building to enhance fire and structural safety, ensure proper light, ventilation and sanitation, improve accessibility, incorporating sustainability aspects through rainwater harvesting, energy efficiency, renewable energy etc
- Introduction to process of securing development and building use permission. Discussion on role and responsibilities of individuals involved in this process.

Methodology:

- Lectures, presentation, group discussions.

Reference:

- National Building Code of India
- Final Comprehensive GDCR, Gujarat
- Urban and Regional Planning in India: A Handbook for Professional Practice, S. K. Kulshrestha
- Town Planning: Principles, Process and Practice by A.K. Jain
- Urban Planning Theory and Practice, M. Pratap Rao

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Subject Code: 1001506 | Elective II: Interior Design | Credit: 02

Course Content:

- Historicity, Principles , Built-in and Movable Furniture
- Interior fittings and furnishings
- Color, Form , Texture and lighting in Interiors
- Building services and materials related to interior design

Methodology:

Tutorial/lab work, presentations on various aspects of interior design. A small interior design project can be introduced to students and can be worked on conceptually.

References:

1. Architecture and Interior Design: An Integrated History to the Present by Buie Harwood (Author), Bridget May (Author), Curt Sherman
2. Beautiful Home: Ideas for Interior Design, Fittings & Furniture by Anne Wiltsher

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Subject Code: 1001507 | Elective I: Advance Computer Application | Credit: 02

Course Content:

- Basics and advances of 3-D Modeling.
- Rendering through software & Walk through.
- Introduction to Analytical software for energy efficiency calculations, quantity takeoff, project management, day lighting visualization, parametric analysis etc
- Study through softwares like Lumion, Rhino, Grasshoper, etc.

Methodology:

- Lectures, presentation, Computer Lab lectures & presentations, practice sessions.

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Subject Code: 1001508 | Elective I: Art Appreciation | Credit: 02

Course Content:

- Artist's role in society.
- The influence of contextual and cultural factors on development of art forms.
- Study of different Art "isms" such as Abstract Art, Dadaism, Brutalism, and Impressionism.
- Demonstrate an understanding of Art Criticism including the description, analyses, interpretation and evaluation of a given work.
- Understanding the importance of art and aesthetics in architecture its symbiotic relationship and application of different art forms.
- The comparative exploration of art, architecture, and design from the historical origins of civilization to contemporary manifestations of art practice.

References:

- Introduction of Art Appreciation and Aesthetics: An approach to the humanities by Panizo, Rustia
- Aesthetics and the Environment: The Appreciation of Nature, Art and Architecture by Allen Carlson
- Art Matters: A Contemporary Approach to Art Appreciation by Pamela Gordon
- Gateways to Art by Debra J. De Witte, Ralph M. Larmann, M. Kathryn Shields
- Art: A Visual History by Robert Cumming.

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Subject Code: 1001509 | Elective I: Basics of Photography | Credit: 02

Content:

- To develop an understanding of the historical and cultural value of documenting the built environment.
- Understanding of camera, Lenses (Telescopic and wide angle), exposure.
- Daylight photography, Night-vision
- Focus and Optical parallax
- Photographic films and papers
- Digital technique
- Video filming technique

References:

- Basics Architectural Photography by Heinrich, Michael
- The Photographer's Eye: Composition and Design for Better Digital Photos by Freeman, Michael
- Julian Calder and John Garrett The 35mm Photographer's Handbook, Pan Books, London, 1999
- Julie Adair King, Digital Photography for Dummies, COMDEX, New Delhi 1998

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Subject Code: 1001510 | Elective I: Stage / Theatre Set Design | Credit: 02

Content:

For Dance/Drama/Lecture/Theatre

- Historical Evolution of the stage, degree of encirclement in various types of stage designs such as open air, arena, thrust -in and proscenium stages
- Terminology and Theory of Stage Design
- Technical aspects like Sound, Lighting and Colour scheme
- Visualization of and creation of sets e.g. with backdrops and scenery

For Film Set Design

- Film set designs with response to camera positioning and movement
- Indoor and outdoor shooting
- Film sets as a creation of virtual environment appropriate for the scenery and shots
- Support structure for film set erection for indoor and outdoor shooting
- Architects role in cinematography

References:

- Stage Design: A Practical Guide by Gary Thorne
- Theatre Design: Behind the Scenes with the Top Set, Lighting, and Costume Designers by Babak A. Ebrahimian

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Subject Code: 1001511 | Elective I: Sociology & Architecture | Credit: 02

Content:

- Sociological perspective to enhance building design
- Quantitative and qualitative research tools to anticipate designs
- Understanding of the interrelationships between people, organizations, and their built and natural surroundings
- Special emphasis on Psychology, Anthropology, Economics, Urban geography and Site Planning

References:

- The Sociology of Architecture: Constructing Identities by Paul Jones (Author)
- Sociology: Exploring the Architecture of Everyday Life by David M. Newman

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Subject Code: 1001512 | Elective I: Short Film Making | Credit: 02

Content:

- Reviewing fundamentals that go into an effectively written screenplay and short screenplay via lectures, text, and other reading.
- Watch/read, and discuss the strengths and weaknesses of numerous short films and, from such analysis, learn how to improve your own writing skills and material.
- Analyze the messages and moods in films as conveyed by shot and angle choices
- Demonstrate understanding of sequencing by producing in-camera edited sequence

References:

- Short Films: Writing the Screenplay (Creative Essentials) by Patrick Nash
- Making Short Films: The Complete Guide from Script to Screen by Clifford Thurlow
- Writing Short Films: Structure and Content for Screenwriters by Linda J. Cowgill