

# Bachelor of Architecture

## Syllabus - First Semester

### ARCHITECTURAL GRAPHICS SKILLS-I

Course Code: ARC2104

Credit Units: 03

#### Course Objective:

- To familiarize the students with various drawing tools and accessories used in drafting and lettering techniques to produce and visualize geometrical composition and form.
- To provide a clear understanding about the scale measurement; plane geometry, solid geometry and projections used as drawing technique.

#### Course Contents:

##### Module-I: Free Hand Drawing and Lettering

Free hand and mechanical lettering.

##### Module-II: Basic Technical Drawing

Concept and types of line, Division of lines and angles, Drawing polygons, Inscribing and circumscribing circles in polygons, Drawing geometrical curves helix, Conoid etc.

##### Module-III: Orthographic Projections- Planes

Definition, Meaning and concept, Planes of Projections, First angle projections, Projection of points, Lines and planes in different positions.

##### Module-IV: Orthographic Projections- Solids

Projection of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.) in different positions. Sections of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc) in varying conditions of sectional plane.

##### Module-V: Solid Geometry

Construction of section, Intersection and interpenetration of solid.

#### Examination Scheme:

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	1	1	1	10	10	25	5	50	0	50	50	100	3	3

#### References:

- A Pattern Language, Alexander Christopher
- Structure in Architecture, Heller Robert and Salvadori Mario
- Design Fundamental in Architecture, Walter Gropius
- Pattern of Nature, Peter Streens
- Elements of Architecture, Meiss Pieree Von
- Architecture: Form, Space and Order, Francis D.K. Ching

- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
- Architectural Graphic standards editor, Boaz Joseph
- Planning – the Architect’s handbook, E and E.O

# BASIC DESIGN AND VISUAL ARTS-I

**Course Code: ARC2105**

**Credit Units: 03**

**Course Objective:**

- To understand the elements and principles of Basic Design as the building blocks of creative design through exercises that will develop the originality, expression, skill and creative thinking.
- Familiarize with principles and theories of arts and architectural composition
- To involve students in a number of exercises to understand the grammar of design and visual composition.
- To develop presentation skills, visual expression and representation, imaginative thinking and creativity through free hand sketching and painting on various mediums and materials.
- To familiarize students with the grammar of art by involving them in a series of free hand exercises both indoor and outdoor to understand form, proportion, scale, etc

**Course Contents:**

**Module I: Theory of Design:**

Introduction to Principles of design and Elements of Design. Application of elements and Principles of Design through 2-D and 3-D compositions.

**Module II: Composition and colour wheel**

Solids and voids, Positive negative spaces, textures, Graphic and architectural Composition, colour wheel and primary, secondary and tertiary colours.

**Module III: Free Hand Sketching**

Free hand sketching and drawing, Study of light, shade and shadow, Drawing curves and other shapes, Comprehension of scale, still life drawing- from observation & memory, Nature. Drawing People, Furniture and various rendering skills and techniques like textures, materials, finishes using various equipment like transfer, airbrush and architectural drafting.

**Module IV: Painting**

Introduction of painting – Colour – Properties of colour – Colour schemes – Types of colours - Application and visual effects of colour. Exercise involving Study of colour – Properties of paper, brush and other tools – Basic washes – 3D effects from still-life, nature and built environment using mono chromatic and multi colour.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	0	1	1	10	10	25	5	50	50	0	50	100	3	3

**References:**

- Perspective for the Architect: Themes and Hudson
- Perspective and Sciography, Shankar Mulik
- Mastering AutoCad: George Omura
- Interior Design: Ahmed Kasu
- Architectural Graphics, Ching Frank
- Engineering Drawing, N.D. Bhatt
- Architectural Graphic standards editor, Boaz Joseph
- Planning – the Architect’s handbook, E and E.O.
- Time Saver standards for building types, Editor Joseph D.C. and John Callender.
- Rendering with pen and ink
- Practical Plane and Solid Geometry, H. Joseph and Morris

# STRUCTURE-I

**Course Code: ARC2109**

**Credit Units: 02**

**Course Objective:**

To introduce the structural system in a building with all the basic components to understand the functions of various elements and building technologies used in various types of buildings.

**Course Contents:**

**Module I: Engineering Mechanics**

Introduction , force, resultant force, parallelogram ,triangle, and polygon law of forces, system of forces, Lami's theorem, moment of forces, parallel forces , couple , centre of gravity , moment of inertia, friction , angle of friction, angle of repose, basics of pulley centripetal and centrifugal force, super elevation ,work, power, energy. Frame- perfect and imperfect frame, motion of a lift, lifting machine

**Module II: Stress And Strain**

Introduction, direct stress and strain , shear stress and strain, stress strain diagram for mild steel, young's modulus , poisson's ratio, shear modulus, bending equation for beam in simple bending volumetric strain, bulk modulus, stress in bass of varying section, shear stress diagram, stresses in composite bass, flitched beams, stresses due to change in temperature, principal of superposition, principal stress and strain , Mohr's circle of stresses , resilience.

**Module III: Shear Force And Bending Moment Diagram**

Types Of Beams , Supports , Loadings , Assumption Of Theory Of Bending ,SFD And BMD

**Module IV: Theory of Yielding And Failure**

Material Failure, Structural Failure, Max Principal Stress (Rankine's theory), Max Principle Stress (Saint-Venant's principle), Maximum Shear Stress , Total Strain Energy Theory , Shear And Distortion Strain (von Mises and Hencky)

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials, M.V. Naik
- Strength of Materials, Khurmi R. S.
- Applied Mechanics and Strength of Materials, Khurmi R. S.
- Civil Engineering Handbook, P.N. Khanna
- R.C.C. Design, Khurmi, Punmia, Sushil Kumar
- Strength Of Material By R.K Bansal
- Design of Steel Structure, Negi
- Structure in Architecture, Salvadori and Heller
- Elements of Structure, Morgan
- Structures in Architecture, Salvadori
- Building Construction, Mackay WB Vol. 1-4
- Construction Technology, Chudley Vol. 1-6
- Elementary Building Construction, Mitchell
- Structure and Fabric, Everet

## CARPENTRY & MODEL MAKING

**Course Code: ARC2111**

**Credit Units: 03**

**Course Objective:**

The course objective is to teach the modeling aspects with the focus on understanding the scale and proportions. The modeling making can be taught using various materials in a workshop-based activity.

**Course Contents:**

### **Module I: Workshop**

The workshop based activity help understanding the qualities of different materials, different types of joints, model making to the relevant scale. Students may use different materials such as – Paper, Thermocol, Clay, Wood, Plaster of Paris, Metal. Use of different colors in model making to help understand color matching.

### **Module II: 3-D forms**

Plan, design and develop various three-dimensional geometries in the model making.

### **Module III:**

Introduce to the model-making topic of any given materials. Student Presentation and Communication skills.

### **Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	0	1	1	10	10	25	5	50		50	50	100	3	3

### **References:**

- New Origami Arts
- Wooden World, John Smith
- Model Building for Architects and Engineers, John Taylor
- Architectural Models, Rolf Janke
- Student may explore the library resources for various 3D form related activities.

# Syllabus - Second Semester

## ARCHITECTURAL DESIGN-II

**Course Code: ARC2201**

**Credit Units: 05**

**Course Objective:**

- To involve students in a design project(s) that will involve simple space planning and the understanding of the functional aspects of good design.
- To involve students in a small scale building project(s) which will sensitize them to intelligent planning that is responsive to the environmental context.
- To involve students in building case study by choosing appropriate examples to enable them to formulate and concretize their concepts
- To enable the presentation of concepts through various modes and techniques that will move constantly between 2D representation and 3D modeling

**Course Contents:**

**Module I: Site Planning**

Introduction to Site Planning concept and techniques, Understanding the parameters and process of development of Site Planning

**Module II: Circulation and Movement of Vehicles/ Parking Spaces**

Horizontal and Vertical, Pedestrian and vehicular with Parking facilities as well as to develop a semi built form as per their aesthetic sense.

**Module III: Design Exercise-I**

Projects involving small span, single space, single use spaces with simple movement such as bedroom, bathroom, kitchen, predominantly horizontal,

**Module IV: Design Exercise-II**

Projects involving small Scale, as well as simple function public buildings, such as shop, exhibition pavilion, children’s environment, snack bar, residence, petrol bunk, fire station, Fast food take away counter, Small service station for minor repairs and other daily utilities, “Morning Daily Needs Mart

*Note: Time problem should be consider as a CT-1*

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
1	1	2	2	10	10	25	5	50	50	0	50	100	5	6

**References:**

- Petrol filling stations: construction and operation, HMSO, 1990
- Structure in Architecture, Heller Robert and Salvadori Mario
- Design Fundamental in Architecture, Walter Gropius
- Pattern of Nature, Peter Streens

- Elements of Architecture, Meiss Pieree Von
- Architecture: Form, Space and Order, Francis D.K. Ching
- Road Form and Transport, J. Mccluskey, Architectural Press, 1979.
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
- Architectural Graphic standards editor, Boaz Joseph
- Planning – the Architect’s handbook, E and E.O.
- Neufert’s Architect’s data
- Time Saver standards for building types, editor Joseph D.C. and John Callender.
- Department of Road and Transport, Residential roads and footpath, HMSO, 1992.

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY-II

Course Code: ARC2202

Credit Units: 04

## Course Objective:

- To focus on various building materials and construction techniques based on the performing standards and codes, wherein application of each material would be discussed in detail, both in the context of historical and contemporary methodology.
- With time, each topic can also focus on latest trends in practice and usage of new technology/materials. Emphasis is given on load bearing building construction.
- Each material would be taught in a manner such that, its application would be discussed starting from foundation, lintel, sunshades, window/door openings, walling material, and floor & flooring and culminating at roof and parapet wall.

## Course Contents:

### Module I: Foundations

Definitions, Purpose of foundation, types of foundation, selection criteria for foundation based on soil conditions, physical properties and behaviour of various types of soil, bearing capacity, methods of site exploration and testing of soil, introduction to shallow and deep foundation.

*Set of drawings (Units I & II): Load bearing Foundation (brick and stone)*

### Module II: Deep Excavation, Scaffolding & Formwork, Shoring, and Underpinning

Definition, problems in deep excavation, terms of timbering, methods of timbering, precautions to be taken in deep excavation, de-watering. Types of scaffolding, formwork (Slab, arches, vaults and domes) shoring and underpinning, precautions to be taken and methods adopted.

*Set of drawings: Drawings on various supporting structures with materials*

### Module III: Brick Masonry

About material: Manufacturing process, physical and chemical properties Applications: Foundation, walling material, types of brick walls, brick masonry (English, Flemish, rat trap bond) detailed brick layout at corners, junctions and brick piers, style of construction viz., exposed brick work, madras terrace roof, jack arch roof, brick paving, brick arches and domes, reinforced brick roofs and walls, brick piers etc.

### Module IV: Stone Masonry

Geological Classification of rocks – stones (granite, laterite, quartzite, marble, slates), uses of stone, deterioration & preservation of stone, availability, properties and application of stones for construction in India. Stone for finishing, cutting & polishing. Granite & Marble. Types of stone masonry.

*Sets of drawings: types of bricks, header and stretcher, English, Flemish bonds, stone masonry, types of material indications, t- junctions and cross-junctions.*

### Module V: Arches

Type of arches, Materials of construction, Methods of construction.

*Set of drawings: Drawings of different types of arches*

### Examination Scheme:

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
2	1	1	1	10	10	25	5	50	50	0	50	100	4	3

### References:

- Barry, R. (1999). *The Construction of Buildings Vol. 2*. 5th Ed. New Delhi : East-West Press.
- Bindra, S.P. and Arora, S.P. (2000). *Building Construction: Planning Techniques and Methods of Construction*, 19th Ed. New Delhi : Dhanpat Rai Publications.
- Ching, F. D. K. (2000). *Building Construction Illustrated*. 3rd Ed. New York : Wiley.
- Edward, A. and Piano, J. (2009). *Fundamentals of Building Construction: Materials and Methods*. 5th Ed. Hoboken : John Wiley & Sons.
- Foster, J. S. (1963). *Mitchell Building Construction: Elementary and Advanced*. 17<sup>th</sup> Ed. London
- B.T. Batsford Ltd.
- Hailey and Hancork, D. W. (1979). *Brick Work and Associated Studies Vol.II*. London : MacMillan.
- McKay, W. B. (2005). *Building Construction Metric Vol. 1-IV*, 4th Ed. Mumbai :Orient Longman.
- Moxley, R. (1961). *Mitchell's Elementary Building Construction*. London : B. T. Batsford.
- Rangwala, S. C. (1963). *Building Construction: Materials and types of Construction*, 3rd Ed. New York : John Wiley and Sons.
- Rangwala, S. (2004). *Building Construction*. 22nd Ed. Anand.: Charotar Pub. House.
- Sushil-Kumar, T. B. (2003). *Building Construction*, 19<sup>th</sup> Ed. Delhi : Standard Publishers.

## ARCHITECTURAL GRAPHICS SKILLS-II

**Course Code: ARC2204**

**Credit Units: 03**

**Course Objective:**

- To familiarize the student with theoretical, practical and pictorial aspects of architectural drawing.
- To develop perception and presentation of simple architectural forms and buildings.

**Course Contents:**

**Module-I: Metric Drawing**

Types, uses and advantages, Isometric, Axonometric and Pictorial views, Metric Drawing and projection and their Dimensioning, Metric of plane figures composed of straight lines, Metric of circles, Metric of simple and complex block.

**Module-II: Development of Surfaces**

Development of surfaces of cubes, prisms, cylinders, pyramids, cones and spheres.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	1	1	1	10	10	25	5	50	50	0	50	100	3	3

**References:**

- Architectural Graphics, C. Leslie Martin
- Perspective for the Architect, Themes and Hudson
- Perspective and Sciography, Shankar Mulik
- Mastering AutoCad, George Omura
- Interior Design, Ahmed Kasu
- Architectural Graphics, Ching Frank
- Engineering Drawing, N.D. Bhatt
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
- Architectural Graphic standards editor, Boaz Joseph
- Planning – the Architect’s handboSok, E and E.O.
- Neufert’s Architect’s data
- Time Saver standards for building types, Editor Joseph D.C. and John Callender.
- Rendering with pen and ink
- Practical Plane and Solid Geometry, H. Joseph and Morris

## BASIC DESIGN AND VISUAL ARTS-II

**Course Code: ARC2205**

**Credit Units: 03**

**Course Objective:**

- Introduction to Art and appreciation of art and its philosophies
- Development of sensitivity towards sculpture and mural as an integral part of architecture.
- Familiarize with principles and theories of arts and architectural composition
- To utilize the skills by designing logo

**Course Contents:**

**Module I: Art and its philosophy**

Relevance of art in life, Appreciation of art: Painting, Sculpture and Architecture, relationship between painting sculpture and architecture.

**Module II: Types of painting**

Different types of painting styles and their masters and philosophy

**Module III: Types of Sculpture**

Different types of Sculpture, their masters and philosophy. Live scale murals and their uses in building with examples.

**Module IV: Collage, Mural, Sculptures (3-D)**

Collage with paper and various waste materials with theme and presentation, Mural with different materials on live scale, Sculpture with different materials like P.O.P, Clay, paper, wire etc.

**Module V: Painting**

Indoor and out door painting – Rendering techniques Exercise involving Water colour – Water soluble colour pencil – Tempra – Acarali – Water soluble oil colour – Oil colour – Pen and ink – Brush – Air brush – Mixed mediums – Study of multi colour and 3D effects from nature and built environment

**Module VI: Applied Art**

Graphic representations – Visual composition and Abstraction- Exercises involving Logo design, collage, calligraphy and printing.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	0	1	1	10	10	25	5	50	50	0	50	100	3	3

**References:**

- The Sculpture Reference: Contemporary Techniques, Terms, Tools, Materials and Sculpture, Arthur Williams.
- Mural Art: Large Scale Art from Walls around the World by K. Iosifidis.
- Perspective for the Architect, Themes and Hudson
- Perspective and Sciography, Shankar Mulik
- Architectural Graphics, Ching Frank
- Architectural Graphic standards editor, Boaz Joseph
- Planning – the Architect’s handbook, E and E.O.

## STRUCTURE-II

**Course Code: ARC2209**

**Credit Units: 02**

**Course Objective:**

- To understand the basic principles of structural system so that it forms the basis for study of structural design.
- To help students to understand the basic principles of structural behavior and requirements of buildings with emphasis laid on the principles of various load distribution in beams and columns.

**Course Contents:**

**Module I: Deflection Of Beams**

Equation for deflection of beams , formula for maximum deflection under various loading conditions, shear stress in shaft, stiffness of a spring- leaf and helical spring.

Column and struts – effective length ,buckling load , short or long column , slenderness ratio, Rankine's formula, Euler's formula, dams and retaining walls , Rankine's theory for active earth pressure

**Module II: Forces In Members Of Trusses**

Types Of Trusses , Method Of Section , Method Of Joint , Analytical Method , Graphical Method , Analysis Of Plane Trusses And Space Trusses

**Module III: Statically Determinate And Indeterminate Structures**

Condition of equilibrium , compatibility conditions, simple and compound systems , linear and non linear systems , sway and sinking , analysis of statically determinate formulas .

**Module IV: Displacements – Geometric Methods**

Deflected shapes ,moment area method, conjugate beam method, deflection of trusses – graphical method.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials, M.V. Naik
- Strength of Materials, Khurmi R. S.
- Applied Mechanics and Strength of Materials, Khurmi R.S.
- Civil Engineering Handbook, P.N. Khanna
- R.C.C. Design, Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure, Negi
- Structure in Architecture, Salvadori and Heller
- Elements of Structure, Morgan
- Structures in Architecture, Salvadori
- Building Construction, Mackay WB Vol. 1-4
- Construction Technology, Chudley Vol. 1-6
- Elementary Building Construction, Mitchell
- Structure and Fabric, Everet

# ARCHITECTURAL CYBER SECURITY

Course Code: ARC2211

Credit Units: 02

## Course Objective:

To develop an understanding among the students regarding information systems and their corresponding application securities along with the policies and cyber laws for the same.

## Course Contents:

### Module-I

Introduction to information systems, Types of information Systems, Development of Information Systems, Introduction to information security, Need for Information security, Threats to Information Systems, Information Assurance, Cyber Security, and Security Risk Analysis.

### Module-II

Application security (Database, E-mail and Internet), Data Security Considerations-Backups, Archival Storage and Disposal of Data, Security Technology-Firewall and VPNs, Intrusion Detection, Access Control. Security Threats -Viruses, Worms, Trojan Horse, Bombs, Trapdoors, Spoofs, E-mail viruses, Macro viruses, Malicious Software, Network and Denial of Services Attack, Security Threats to E-Commerce- Electronic Payment System, e- Cash, Credit/Debit Cards. Digital Signature, public Key Cryptography.

### Module-III

Developing Secure Information Systems, Application Development Security, Information Security Governance & Risk Management, Security Architecture & Design Security Issues in Hardware, Data Storage & Downloadable Devices, Physical Security of IT Assets, Access Control, CCTV and intrusion Detection Systems, Backup Security Measures.

### Module-IV

Security Policies, Why Policies should be developed, WWW policies, Email Security policies, Policy Review Process-Corporate Policies-Sample Security Policies, Publishing and Notification Requirement of the Policies. Information Security Standards-ISO, IT Act, Copyright Act, Patent Law, IPR. Cyber Laws in India; IT Act 2000 Provisions, Intellectual Property Law: Copy Right Law, Software License, Semiconductor Law and Patent Law.

## Examination Scheme:

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment			External Assessment							
				CT	TA	A	Total	Theory/Studio	VIVA/Practical	Total				
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

## References:

- Charles P. Pfleeger, Shari Lawrance Pfleeger, "Analysing Computer Security ", Pearson Education India.
- V.K. Pachghare, "Cryptography and information Security", PHI Learning Private Limited, Delhi India.
- Dr. Surya Prakash Tripathi, Ritendra Goyal, Praveen kumar Shukla ,"Introduction to Information Security and Cyber Law" Willey Dreamtech Press.
- Schou, Shoemaker, " Information Assurance for the Enterprise", Tata McGraw Hill. CHANDER, HARISH," Cyber Laws And It Protection " , PHI Learning Private Limited, Delhi ,India.

# Syllabus - Third Semester

## ARCHITECTURAL DESIGN-III

**Course Code: ARC2301**

**Credit Units: 06**

**Course Objective:**

- To create an understanding of the inter relationships amongst various elements of architecture – form, function, space planning, user perception and behavior and culture.
- To understand the characteristics of site and the importance of site planning which includes built form and open space and context.
- To understand the relationship between form and spaces and the importance of aesthetics.
- To ascertain the response of user group through case studies.
- To enable the presentation of concepts through sketches and models and drawings.

**Course Contents:**

Areas of concern/ focus:

- form-space relationships
- spatial organization
- behavioral aspects especially those relating to children
- site planning aspects
- appropriate materials and construction
- Passive energy

**Module I: Design Exercise-I**

Projects involving multiple space utilization, with complex movement such as Hotel, Motel, Recreation Club, Museum, Library

**Module II: Design Exercise-II**

Suggested design problem Polyclinic, Nursing home, primary schools, schools for children with specific disabilities, banks, neighbourhood market, nursery or, primary health center,

*Note: Time problem should be consider as a CT-1*

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	1	1	3	10	10	25	5	50	50	0	50	100	6	6

**References:**

- Joseph De Chiara, Michael J Crosbie, “Time Saver Standards for Building Types”, McGraw Hill Professional, 2001.
- Julius Panero, Martin Zelnik, “Human Dimension and Interior Space”, Whitney Library of Design, 1975
- Joseph De Chiara, Julius Panero, Martin Zelnik, “Time Saver Standards for Interior Design and Space Planning”, McGraw Hill, 2001.

- Ernst Neuferts, “Architects Data,” Blackwell, 2002. 5. Ramsey et al, “Architectural Graphic Standards”, Wiley, 2000.
- Richard P. Dober, “Campus Planning” - Society for College and University Planning, 1996.
- 2. Achyut Kanvinde, “Campus design in India”, American year Book, 1969
- Kevin Lynch, “Site planning”, MIT Press, Cambridge, 1967
- Sam F. Miller, “Design Process: A Primer for Architectural and Interior Design”, Van Nostrand Reinhold, 1995.

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY-III

**Course Code: ARC2302**

**Credit Units: 04**

**Course Objective:**

- To focus on various building materials and construction techniques based on the performing standards and codes, wherein application of each material would be discussed in detail, both in the context of historical and contemporary methodology.
- With time, each topic can also focus on latest trends in practice and usage of new technology/materials.
- Emphasis is given on importance of water and damp proofing in building construction.

**Course Contents:**

**Module I: Doors**

Types of doors based on the make (battened, ledged, braced, flush, paneled, framed and etc.) usage (pivoted, single leaf, double leaf, revolving, swing, rolling shutter, safety doors, collapsible, etc.), hardware fixtures, joinery, door-fixing details, and types of materials used in doors (wood, metal, glass, aluminium, & PVC).

*Set of drawings: Types of timber and metal doors (joinery and fixing details), fire-rated doors, precast doors, etc.*

**Module II: Windows and Ventilators**

Types of windows based on the make (sliding, pivot, casement, louvered, fixed, bay window, etc.) and material (wood, steel, glass and aluminium) hardware fixtures, joinery, window fixing details.

*Set of drawings: Types of timber and metal doors (joinery and fixing details).*

**Module III: Floors and Flooring Materials**

Introduction to types of floors (ground, upper) and types of paving, essential requirements of a floor, factors affecting selection of flooring material, natural and artificial flooring materials like mud, brick, stone, tile, jack-arch floors, cement concrete, granolithic, wooden flooring, timber floor supported on rolled steel joists (RSJ), flag stone floor resting on RSJ, rubber, Vinyl, PVC, PVA etc., introduction to various floor finishes and fixing details.

**Module IV: Roofs and Roof coverings**

Introduction, characteristics of roof, types of roofs (flat- madras terrace roof, RCC slab, classification of roofs by the method of geometry and methods of construction – pitched, lean-to, coupled, couple-closed, collar, scissor, king post and queen post), and by materials (GI sheets, Fibre, Glass, Aluminium, asphaltic, polycarbonate, clay tiles, coir-based corrugated sheets, etc). Roof fixing details along with gutter.

*Set of drawings: Types of trusses (joinery and fixing details of different types of roofing materials).*

**Module V: Water Proofing and Damp Proofing**

Causes and defects of dampness, methods adopted for waterproofing and damp proofing at different levels of a building, admixtures and different materials (rigid, flexible) used in the process.

*Set of drawings: Details of application of Damp Proof Course and Water Proofing.*

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
2	1	1	3	10	10	25	5	50	50	0	50	100	4	3

**References:**

- Barry, R. (1999). *The Construction of Buildings Vol.II. 5th Ed.* New Delhi : East-West Press.
- Bindra, S. P. and Arora, S. P. (2000). *Building Construction: Planning Techniques and Methods of Construction*, 19th Ed. New Delhi : Dhanpat Rai Publications.
- BIS and relevant IS codes.
- Ching, F. D. K. (2000). *Building Construction Illustrated*. 3rd Ed. Wiley.
- Chudley, R. (2008). *Building Construction Handbook*. Noida : Elsevier.
- McKay, W. B. (2005). *Building Construction Metric Vol. 1–IV*, 4th Ed. Mumbai :Orient Longman.
- Meghashyam, K. K. (2005). *Reinforced Concrete Constructions for 21st C.* New Delhi :J.M. Jaina.
- Rangwala, S. (2004). *Building Construction*. 22nd Ed. Anand : Charotar Publishing.
- Rangwala, S. C. (1963). *Building Construction: Materials and types of Construction*, 3rd Ed. New York : John Wiley and Sons, Inc.
- Sushil-Kumar, T. B. (2003). *Building Construction*. 19<sup>th</sup> Ed. Delhi : Standard Publications

## ARCHITECTURAL GRAPHICS SKILLS-III

**Course Code: ARC2304**

**Credit Units: 03**

**Course Objective:**

- To familiarize the students with theoretical, practical and pictorial aspects of architectural drawing.
- To introduce the technique for perception and presentation of light and shadow in architectural forms and buildings.

**Course Contents:**

**Module-I: Perspective Drawing**

Purpose and use. Differences with Metric projections, Anatomy of a perspective-cone of vision, station

Points, picture plane, eye level horizon line, ground line, vanishing point, etc, Types i.e. Angular and Parallel Perspectives.

One Point Perspective –Perspectives of simple and complex box blocks, Perspective of simple curved surface, Perspective of simple household furniture items.

Two Point Perspective - Perspectives of simple and complex box blocks, Perspective of simple curved surface, Perspective of simple household furniture items.

**Module-II: Sciography**

Values in shades and shadows, constructing plan shadows (point, line and plane), Constructing shadows in elevations (Point, line and Plane). Short- cut methods for constructing shadows. Introduction of sciography in perspective drawings.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
1	1	1	1	10	10	25	5	50	0	50	50	100	3	3

**References:**

- Architectural Graphics: C. Leslie Martin
- Perspective for the Architect: Themes and Hudson
- Perspective and Sciography, Shankar Mulik
- Mastering AutoCAD: George Omura
- Interior Design: Ahmed Kasu
- Architectural Graphics – Ching Frank
- Engineering Drawing – N.D. Bhatt
- Engineering Drawing – P.S. Gill
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
- Architectural Graphic standards editor – Boaz Joseph
- Planning – the Architect’s handbook, E and E.O.
- Neufert’s Architect’s data
- Time Saver standards for building types, Editor Joseph D.C. and John Callender.
- Rendering with pen and ink
- Practical Plane and Solid Geometry – H.Joseph and Morris

## SURVEYING AND LEVELLING

**Course Code: ARC2306**

**Credit Units: 03**

**Course Objective:**

- To understand the practical surveying in the field.

**Course Contents:**

**List of Experiments** (Minimum 10 practical should be performed out of the following)

**To conduct the Chain surveying**

- 1) Measurement of distance by ranging and chaining.
- 2) Locating various objects by chain & cross staff surveying.
- 3) Determination of area of polygon by chain and cross staff survey.

**To conduct the Compass Surveying.**

- 4) Measurement of bearings of sides of traverse with prismatic compass and computation of correct included angle.
- 5) Locating given building by chain and compass traversing, (One full size drawing sheet)

**To conduct the Leveling.**

- 6) Determination of elevation of various points with dumpy level by collimation plane method and rise & fall method.
- 7) Fixing bench mark with respect to temporary bench mark with dumpy level by fly leveling and check levelling.
- 8) L-Section and cross section of road. (One full size drawing sheet for L-Section and cross section)
- 9) Measurement of horizontal angles theodolite by method of repetition.
- 10) Measurement of vertical angles with theodolite. (One full size drawing sheet)
- 11) Determination of horizontal distance between two inaccessible points with theodolite.
- 12) Locating given building by theodolite traversing. (One full size drawing sheet)

**To conduct the Plotting.**

- 13) Locating given building by plain table traversing. (One full size drawing sheet)
- 14) Three-point problem in plane table traversing.
- 15) Determination of elevation of point by trigonometric leveling.
- 16) Contour plan of given area using Total Station. (One full size drawing sheet)
- 17) To give layout of given plan of building.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
2	1	2	0	10	10	25	5	50	50	0	50	100	3	3

## STRUCTURE-III

**Course Code: ARC2308**

**Credit Units: 02**

**Course Objective:**

- To understand an informal choice regarding the most appropriate structural system for the building design due to different types of loading.
- Provide a basic understanding about the structural modeling and research techniques in the field of Architecture.

**Course Contents:**

**Module I: Loads and spans**

Introduction, single concentrated load, udl longer than the span, UDL shorter than the span, two concentrated spans, series of concentrated loads, equivalent UDL.

**Module II: Arches and Cables**

Basis of arches, cables and suspension in bridges, basic concept, frames with and without lateral translations of joints, general case – 1 storey column slender in height and bases fixed or hinged.

**Module III: Slope deflection method**

Slope Deflection Method And Moment Distribution Method, Development Of Slope Deflection , Equation , Analysis Of Frame – With Lateral Translation And With No Lateral Translation Of Joints

**Module IV: Moment distribution Method**

MDM- Development Of Method, Analysis Of Frames With Lateral Translation And With No Lateral Translation Of Joints , Symmetrical Frames , Multi Storey Frames , No Shear Moment Distribution

**Module V: Kani's Method**

Basic concept, frames with and without lateral translation of joints, general cases, storey column unequal in height and bases fixed or hinged

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials by M.V. Naik
- Strength of Materials – Khurmi R. S.
- Applied Mechanics and Strength of Materials – Khurmi R. S.
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure – Negi
- Structure in Architecture – Salvadori and Heller
- Mechanics of materials – E. P. Popov
- Elements of Structure by Morgan
- Structures in Architecture by Salvadori
- Building Construction by Mackay WB Vol. 1-4
- Construction Technology by Chudley Vol. 1-6
- Elementary Building Construction by Mitchell
- Structure and Fabric by Everet

# ARCHITECTURAL SERVICES-I (BUILDING SERVICES-I) (WATER SUPPLY AND SANITATION)

**Course Code: ARC2309**

**Credit Units: 02**

**Course Objective:**

Introduce students to the Water Supply and Sanitation system design in the buildings. Make aware students to the various building regulations and standards related to the water supply & sanitation requirements of the built spaces.

**Course Contents:**

**Module I: Water Supply**

Introduction to water supply Meaning, Scope and Purpose. Need to conserve water and requirements of water supply in different building types- storage, distribution. Study water source, methods of water collection and distribution systems at macro and micro level (For varying building typologies).

**Module II: Sanitation**

Introduction of the meaning, scope, and purpose of sanitation in the building complexes. Make student understand the importance of public health, water supply and sanitation in a typical building design. Study the layout plan of Water Supply and Sanitation design in a building plan or use existing design studio project. Study the water demand in general; calculate buildings water requirement analysis as per National Building Code and present water and sanitation plan by the students.

**Module III: Plumbing, Road and Drainage Systems**

Introduce to the basic concepts of municipal drainage system, road pattern at city level and plumbing design of building site level and their integration in a buildings system formation. Introduce to the Plumbing Designs. Share case study of the city road, drainage system and building site level water supply and sanitation system planning process. Use of ICT to present specific case, student presentation on water supply and sanitation at building and site level.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	1	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Water supply, waste disposal and environmental engineering, Chatterjee
- Water supply and sanitary engineering, Singh
- Water supply and sanitation, Shah
- Design and practical handbook of plumbing, Mohan & Anand
- Plumbing- Design and practice, Deolalikar
- Civil handbook, Khanna
- Building construction details, Banz
- Maintenance of buildings, Panchdhari
- Kitchen and baths, HBI

# Syllabus - Fourth Semester

## ARCHITECTURAL DESIGN-IV

**Course Code: ARC2401**

**Credit Units: 06**

**Course Objective:**

- To create a holistic understanding of the socio-cultural, geographic and economic aspects that shape the built environment as well as to expose the students towards the design of simple community oriented buildings.
- To expose the students on the methodology of conducting various surveys covering, physical, visual characteristics and demographic aspects.
- To understand the vernacular / traditional architecture involving local materials and construction techniques.
- To emphasis on the importance of designing built form and open spaces that meet the aspirations of the community.
- To enable the presentation of concepts through 2D and 3D presentation including sketches and model.

**Course Contents:**

Areas of concern/ focus:

- Multiple Storied
- Horizontal And Vertical Movement
- Active Cum Passive Energy
- Community Oriented Design
- Simple Public Buildings (Not More Than Ground+ 2 Floors)
- Appropriate Materials And Construction
- Climatology
- Local Building Byelaws

**Module I: Design Exercise-I**

Suggested design problem: Apartments for IT employees, Govt. servants, teaching faculty, Textile weavers, etc. Luxury flats in the center of the city. Group Housing in the suburbs, Midway complex

**Module II: Design Exercise-II**

Suggested design problem: Centre for Arts/ Culture, Schools- Kindergarten, Primary, High school, Hostel etc.

Club building, campus students center, Motel, Library

*Note: Time problem should be considered as a CT-1*

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	1	1	3	10	10	25	5	50	50	0	50	100	6	6

**References:**

- Joseph De Chiara, Michael J Crosbie, “Time Saver Standards for Building Types”, McGraw Hill Professional, 2001.
- Julius Panero, Martin Zelnik, “Human Dimension and Interior Space”, Whitney Library of Design, 1975
- Joseph De Chiara, Julius Panero, Martin Zelnik, “Time Saver Standards for Interior Design and Space Planning”, McGraw Hill, 2001.
- Ernst Neuferts, “Architects Data,” Blackwell, 2002. 5. Ramsey et al, “Architectural Graphic Standards”, Wiley, 2000.
- Richard P. Dober, “Campus Planning” - Society for College and University Planning, 1996. 2. Achyut Kanvinde, “Campus design in India”, American year Book, 1969
- Kevin Lynch, “Site planning”, MIT Press, Cambridge, 1967
- Sam F. Miller, “Design Process: A Primer for Architectural and Interior Design”, Van Nostrand Reinhold, 1995

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY-IV

**Course Code: ARC2402**

**Credit Units: 04**

**Course Objective:**

- To impart knowledge on various types of floors and flooring material, partitions and paneling, various surface finishes, various modes of vertical transportation.
- To equip students with the advances in the building construction methods and their applications.

**Course Contents:**

**Module I: Partitions, paneling and false ceiling**

Introduction, requirement of partition, types of partitions (viz. Brick, clay, concrete, glass, timber, gypsum etc.) Various types of paneling (glazed, wooden etc.), details for paneling, sound proof and lightweight partitions.

*Set of drawings: Types of partitions, paneling and false ceiling (joinery and fixing details).*

**Module II: Staircases**

Definitions, Tread, riser, stringer, nosing, flight, landing, head room, handrail, balusters, newel post etc. Types of staircases: straight, dog-legged, open-well, geometrical, circular, spiral, bifurcated. Construction details & types of finishes of wooden, metal stairs and R.C.C. stairs. Emphasis should also be given on details related to differently-abled people.

*Set of drawings: Types of Staircase, RCC, timber and metal (joinery and fixing details).*

**Module III: Surface Finishes- Plastering, Varnishes, Paints, Laminates, etc.**

Smooth finishes, textured finishes, ribbed, hitched, exposed aggregate finish, weathering of finishes, rough cast, dry dash, stucco, gypsum, and pop applications, protective and decorative coatings, cladding. Defects in plastering, type of plastering, method of plastering. Varnishes polish and Paints-distempers, emulsions, cement base paints, oil base. Constituents of oil paints, characteristics of paints, types of paints and process of painting on different surfaces. Types of varnish, methods of applying varnish, French polish, melamine finish, lacquer finish their applications in building activities. Laminates and veneers, type of laminates, laminated wood, veneer from different types of timber, and their characteristics. Emphasis should also be given on details related to differently-abled people.

**Examination Scheme:**

Periods				Evaluation Scheme									Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment							
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total				
				I	II										
2	1	1	1	10	10	25	5	50	50	0	50	100	4	3	

**References:**

- Barry, R. (1999). *The Construction of Buildings Vol.II*. 5th Ed. New Delhi : East-West Press.
- Bindra, S. P. and Arora, S. P. (2000). *Building Construction: Planning Techniques and Methods of Construction*, 19th Ed. New Delhi : Dhanpat Rai Pub.
- BIS and relevant IS codes.
- Brookes, A. J. (1983). *Cladding of Buildings*. Longman Inc.
- Ching, F. D. K. (2000). *Building Construction Illustrated*. 3rd Ed. Wiley.
- Chudley, R. (2008). *Building Construction Handbook*. Noida : Elsevier.
- Eldridge, H. J. (1976). *Common Defects in Buildings*. London : HMSO.
- Emmit, S. and Gorse, C. A. (2006). *Barry's Advanced Construction of Buildings*. Blackwell

Publications.

- McKay, W. B. (2005). *Building Construction Metric Vol.1–IV*, 4th Ed. Mumbai : Orient Longman.
- Meghashyam, K. K. (2005). *Reinforced Concrete Constructions for 21st C.* New Delhi: J. M. Jaina.
- Punmia, B. C. (1993). *Building materials and Construction.* New Delhi : Lakshmi Publications.
- Rai, M. (1986). *Advances in Building Materials and Construction.* CSIR.
- Rangwala, S. (2004). *Building Construction.* 22nd Ed. Anand : Charotar Pub. House.
- Rangwala, S. C. (1963). *Building Construction: Materials and types of Construction*, 3rd Ed. New York : John Wiley and Sons.
- Sushil-Kumar, T. B. (2003). *Building Construction*, 19<sup>th</sup> Ed. Delhi : Standard Pub. Distributors.

## ARCHITECTURAL GRAPHICS SKILLS-IV

**Course Code: ARC2404**

**Credit Units: 03**

Course Objective:

- To familiarize the students with 3dimensional visualization of architectural drawing.
- To introduce the graphic treatment of two and three-dimensional drawing.

**Course Contents:**

### **Module-I: One Point Perspective Drawing**

One perspectives of combination of geometrical forms, Building exterior and interior perspectives.

### **Module-II: Two Point Perspective Drawing**

Two perspectives of combination of geometrical forms, Building exterior and interior perspectives. Introduction to three-point perspective and basic exercises based on the same

### **Module-III: Rendering**

Rendering perspectives in different media (Dry and water based color and ink etc.). Presentation techniques in different types of rendering and materials. Variation in color/ ink, as per light position. Use of basic plantation, vehicles etc to introduce scale to building perspectives.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
1	1	1	1	10	10	25	5	50	0	50	50	100	3	3

**References:**

- Architectural Graphics: C. Leslie Martin
- Perspective for the Architect: Themes and Hudson
- Perspective and Sciography, Shankar Mulik
- Mastering AutoCAD: George Omura
- Interior Design: Ahmed Kasu
- Architectural Graphics – Ching Frank
- Engineering Drawing – N.D. Bhatt
- Engineering Drawing – P.S. Gill
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
- Architectural Graphic standards editor – Boaz Joseph
- Planning – the Architect’s handbook, E and E.O.
- Neufert’s Architect’s data
- Time Saver standards for building types, Editor Joseph D.C. and John Callender.
- Rendering with pen and ink
- Practical Plane and Solid Geometry – H.Joseph and Morris

## STRUCTURE-IV

**Course Code: ARC2409**

**Credit Units: 02**

**Course Objective:**

- To understand rational basis of the design of reinforced concrete members and structures through advanced materials and structural behavior.
- Enable students to undertake problems, identify, formulate and solve the critical thought, rational inquiry and self-directed learning.

**Course Contents:**

**Module I: Material and Design Method**

Cement, Fine and Coarse Aggregate, Water, Admixtures, Reinforcements, Properties and Tests For Concrete, WSM Vs LSM, Soil Mechanics, Basis Of Soil Properties, Soil Type, Bearing Capacity, Terzaghi's And Skempton's Formula

**Module II: Beams and Slabs Using LSM and WSM**

Singly Beam, Doubly Beams, T, L Beams, Slabs – Rectangle, Circular, One Way, Two Way, Flat. Using IS 456 :2000 And SP -16, Continuous Beams and Slabs

**Module III: Column and Footing**

Short column and long column, minimum eccentricity, column subjected to combined axial load, uniaxial bending and biaxial bending, design of footing.

**Module IV: Pile and Raft Foundation**

Design Of RCC Piles, Pile Caps, Raft Foundation (Theory)

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials, M.V. Naik
- Strength of Materials, Khurmi R. S.
- Applied Mechanics and Strength of Materials, Khurmi R. S.
- Civil Engineering Handbook, P.N. Khanna
- R.C.C. Design, Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure, Negi
- Structure in Architecture, Salvadori and Heller
- Mechanics of material, E. P. Popov
- Indeterminate structural analysis, J. Sterling Kinney
- Basic structural analysis, C.S. Reddy
- Reinforced concrete structures, R. Park and T. Paulay
- Concrete technology, M.L. Gambhir
- Design of reinforced concrete structures, N. Krishna Raju
- IS: 456- 2000
- SP: 16- 1980
- Elements of Structure, Morgan

- Structures in Architecture, Salvadori
- Building Construction, Mackay WB Vol. 1-4
- Construction Technology, Chudley Vol. 1-6
- Elementary Building Construction, Mitchell
- Structure and Fabric, Everet

## ARCHITECTURAL SERVICES-II (BUILDING SERVICES-II) (ELECTRICAL SYSTEMS & SAFETY)

**Course Code: ARC2410**

**Credit Units: 02**

### Course Objective :

Introduce to the basic concepts of Electrical system design at the building planning level. The course module can help students to understand the basic concepts of electrical layout plan, different annotations, reading drawings as per building design and increase knowledge of the allied building services.

### Course Contents:

#### Module-I: Electrical Systems and Components of Home Electrical Design

Introduction to the scope and purpose of electricity in the building. Basic Principles of electrical circuit as per NBC norms, introduce to the wiring system, distribution system and supply, Methods of wiring- joint box and open and concealed circuit. Wiring materials, lighting accessories wires and cables- materials types, sizes switches, M.C.B. distribution board and meter, lighting accessories switches. In general, introduce to the concept of Home Electricity supply, National Electricity Grid network, Lightning, and sub-station operations at the buildings scale. Allow participation and site visit for students within the campus. Share knowledge of Home Lighting system, power systems, and power load factor; briefly introduce to the energy conservation concepts.

#### Module-II: Building Safety and Electrical Services

As per NBC 2016, introduce to the relevant chapters of Electrical Services, definition, scope and purpose of Building Safety and Electrical Services. Increase knowledge areas of the students based on the energy conservation or new technologies. Market survey to be done by the students.

#### Module-III: Security Systems

Introduce to the theory and practice of various fire security systems such as active fire protection, manual alarm system, detectors, heat detectors, smoke detectors, flame detectors, different firefighting equipment, sprinkler systems, and hydrant systems. Determine the water requirements and calculation in firefighting. Study any building plan for the fire safety, security and system design.

### Examination Scheme:

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	1	0	0	10	10	25	5	50	0	50	50	100	2	3

### References:

- Building Construction - B.C. Punmia
- Building Construction - Rangawalla
- Building Construction and Materials – Gurcharan Singh
- Architectural Graphics – Ching Frank
- Modern Air-Conditioning, Heating and Ventilation: Carrer and G. Pitman.
- Air Conditioning and Ventilation, Servems and Fellows, John Wiley
- Architectural Acoustics: E. David
- An Introduction to Building Physics: Narsmhan

# COMPUTER APPLICATIONS-I

Course Code: ARC2413

Credit Units: 03

## Course Objective:

The course objective is to help understand the available software technologies and their applications in Architectural Designs. In order to enable students to use computer systems, software's and hardware, teaching necessary digital skills are important aspect of the course.

## Course Contents:

### Module I: Introduction to computer Operating System

Introduction to various Operating Systems such as Windows, Linux, Mac and software updates.

### Module II : M.S. Office Word

Basic command to operate the component say M.S. Office such as M. S. Word, Knowledge about D.T.P Techniques in M.S. Word, Use of various Command to make charts, graphs, tables, to help students compile their reports in M.S. Word, exporting & Importing various work done is other software and using of clip Art and making elementary shapes in M.S. Word.

### Module III: M.S. Office Excel & Power Point Application

Live demonstration. Learning the other components of M.S. office like M.S. Excel, M.S. Power Points, etc, Making work sheets in M.S. Excel.

### Module IV: Introduction to Auto Cad (2-D) Software

Introduce to the drafting software for the graphic design, building planning. Explain the various ways to deal with the graphic drawings. Introduce to 2D-3D drawing concepts. Students learn the ability to Drafting, Editing and modification work to be done in the graphic presentation.

Practice on the various AutoCAD commands through software User Interface. Conduct 2D Skills Workshop to train the students. Introduce to the draft skills and minimize errors in the presentation skills.

## Examination Scheme:

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
I	II													
2	0	2	0	10	10	25	5	50	0	50	50	100	3	3

## References:

- Subscribe to various Microsoft online free services, <https://www.microsoft.com/en-in>
- Computer and common sense, Hunt and Shelly

# Syllabus - Fifth Semester

## ARCHITECTURAL DESIGN-V

**Course Code: ARC2501**

**Credit Units: 07**

**Course Objective:**

- To explore the design of buildings addressing the socio – cultural & economic needs of contemporary society.
- To enable the students to understand the importance of spatial planning within the constraints of Development Regulations in force for urban areas.
- To enable the students to design for large groups of people in a socially and culturally sensitive manner, taking into account aspects such as user perception, crowd behavior, large scale movement of people and identity of buildings.
- To emphasis on the importance of understanding the relationship between open space and built form, built form to built form and site planning principles involving landscaping circulation network and parking.
- To explore computer aided presentation techniques involving 2D and 3D drawings and models as required.

**Course Contents:**

Areas of concern/ focus:

- Multiple Storied
- Circulation Intensive
- Behavioral Aspects And User Satisfaction/Socio-Cultural Aspects
- Designing For The Differently Abled
- Building Byelaws And Rules
- Horizontal And Vertical Movement
- Active Cum Passive Energy
- Appropriate Materials And Construction / Locally Available Material
- Climatology
- Site Analysis
- Local Building Byelaws

**Module-I: Design Exercise-I**

Suggested design problem: Housing Projects- detached, semi-detached, row housing, cluster housing, apartment; housing, Religious Complex, Embassy Complex, Guest house, Resort

**Module-II: Design Exercise-II**

Suggested design problem: Old age Home, orphanage, working, women’s hostel, home for physically and mentally challenged; Museum/ Art centre, Educational, campus, R & D centre, shopping complex, Shopping Mall

*Note: Time problem should be considered as a CT-I*

**Examination Scheme:**

Periods				Evaluation Scheme						Total Marks	Credits	Duration of Exam (hr)		
L	T	P	S	Internal Assessment			External Assessment							
				CT		TA	A	Total	Theory/ Studio				VIVA/ Practical	Total
				I	II									

2	1	1	3	10	10	25	5	50	50	0	50	100	7	12
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**References:**

- Architectural Graphics: C. Leslie Martin
- Perspective for the Architect: Themes and Hudson
- Perspective and Sciography, Shankar Mulik
- Mastering AutoCAD: George Omura
- Interior Design: Ahmed Kasu
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
- Architectural Graphic standards editor – Boaz Joseph
- Planning – the Architect’s handbook, E and E.O.
- Neufert’s Architect’s data
- Time Saver standards for building types, Editor Joseph D.C. and John Callender.

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY-V

**Course Code: ARC2502**

**Credit Units: 04**

**Course Objective:**

- To strengthen student’s knowledge about reinforced cement concrete and its applications in buildings.
- To equip students about the methods of designing various structural members using reinforced cement concrete.

**Course Contents:**

**Module I: Introduction to RCC**

Introduction to RCC design, characteristics of RCC, assumptions, nominal mix, Design mix. Neutral axis; balanced, under & over reinforced sections.

**Module II: Foundations**

Types of foundations – raft, pile etc. Design of foundation for R.C .C structure –Foundation at different levels- Piles, Pile Cap and pile load test.

**Module III: Design of RCC Columns**

Design of RCC columns, axially and eccentrically loaded Columns.

**Module IV: Design of Reinforcement in Beams& Staircases**

Design of singly reinforced beams for flexure, shear & bond. Concept of doubly reinforced beams and design. Concepts and Design of different types of staircases.

**Module V: Basic Concepts and design of different types of slab**

Concepts and design of different types of slabs spanning in one direction, two directions, continuous slab, cantilevered slab, circular slab and flat slab.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	1	1	1	10	10	25	5	50	50	0	50	100	4	3

**References:**

- Arumanikyam. (2000). *Design of RCC Structures*. I.K. International Publishing House.
- Bhavikathi, S. S. (2008). *Design of RCC Structural Elements*. Newade International Publishers.
- Murthy, V. N. S. *Soil Mechanics & Foundation Engineering*. SaiKripa Technical Consultants.
- Punmia, B. C. (2005). *Soil Mechanics and Foundation Engineering*. Delhi :Laxmi publications.
- Punmia, B. C. (2006). *R C C Designs*. Delhi :Laxmi Publications.
- Punmia, B. C. (2007). *Limit State Design of Reinforced Concrete*. Delhi : Laxmi Publications
- Ramachandra, S. (2004). *Limit State Design of Concrete Structures*. Scientific publishers.
- Ramamrutham, S. (2000). *Design of RCC Structures*. New Delhi : Tata McGraw Hill Education.
- Sai, R. K. S. (2010). *Design of Steel Structures*. Pearson Education India.

- Swamisaran. (2010). *Analysis and Design of Substructures*. 2nd Ed. (LSD).
- Varghese, P. C. (2011). *Limit state Design of Reinforced Concrete*. PHI Learning.
- Design Aid SP 16,
- Detailing of Reinforcement, SP 34
- Explanatory Hand Book SP24
- I S 456-2000
- I S 800 -2007.
- I S 875-1987

## STRUCTURE-V

**Course Code: ARC2509**

**Credit Units: 02**

**Course Objective:**

To understand the analysis of Indeterminate structures and their use in field in greater depth.

**Course Contents:**

**Module I: Design Of Staircase And Retaining Wall**

General Features, Types of Staircase, Distribution of Loading on Stairs, Wall Proportions, Design Principles, Counterfort Retaining Walls

**Module II: Portal Frames**

Design of Portal Frames with Hinged Base, Design of Portal Frames with Fixed Base, Structural Analysis and Design of Grid Floor, Slab Culvert Rectangular – Beam Deck

**Module III: Masonry Structures**

Introduction, Masonry Walls, Design of Wall and Column Footing

**Module IV: Pre-Stressed and Post Tensioning Concrete**

Elements of Pre-Stressed and post tensioning Concrete, Principles and System, Loss, Analysis and Design of Pre-Stress and post tensioned Beam.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials by M.V. Naik
- Strength of Materials – Khurmi R. S.
- Applied Mechanics and Strength of Materials – Khurmi R. S.
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure – Negi
- Structure in Architecture – Salvadori and Heller
- Mechanics of materials – E. P. Popov
- Reinforced concrete structures – R. Park and T. Paulay
- Concrete technology- M.L. Gambhir
- Design of reinforced concrete structures- N. Krishna Raju
- IS: 456- 2000
- SP: 16- 1980
- Elements of Structure by MORGAN
- Structures in Architecture by SALVADORI
- Building Construction by MACKAY WB Vol. 1-4
- Construction Technology by CHUDLEY Vol. 1-6
- Elementary Building Construction by MITCHELL

# LANDSCAPE ARCHITECTURE

**Course Code: ARC2510**

**Credit Units: 03**

**Course Objective:**

- 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.

**Course Content:**

**Module-I: Introduction to Landscape Architecture**

Definition, role and scope of Landscape Architecture, Understanding its relationship with earth, water, fire, air, 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, plant scape, 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-II: 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-III: 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-IV: 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-V: 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. Landscaping Parks and roads, Terrace Gardens, landscaped courts. Preparation of landscape schemes; Landscape Construction.

**APPROACH**

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

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
1	0	1	1	10	10	25	5	50	50	0	50	100	3	3

**References:**

- Geoffry& Susan Jellicoe: landscape of Man: shaping the environment from pre-history to the present day.
- Brian Hackett: planting design
- Nick robinson: planting design handbook.
- Ian Mcharg: Design with nature
- Simonds: landscape architecture
- Jay Applaton: Experience of Landscape
- Paul Bannet: The language of Landscape
- SimondSwaffield: Theory in Landscape Architecture
- Colour and Design for Every Garden by Ortloff and Raymore
- Design with Nature by I. Mcharg
- The Way We Live by Alfresco
- New Landscape Design by Robert Holden

## ARCHITECTURAL SERVICES-III (FIRE SAFETY SYSTEM AND BUILDING BYE-LAWS)

**Course Code: ARC2511**

**Credit Units: 02**

**Course Objective:**

To increase knowledge capacity of the students in the Fire Safety, Plumbing system and Security systems to be implemented in the building planning process. Objective is to introduce, study and discuss the various building development regulations, their application and byelaws in the building service design.

**Course Contents:**

**Module I: Fire Safety Services**

Introduction to the basic understanding about fire, growth decay curve; Properties of materials, and their Fire Rating Study building materials ignitability, combustibility, surface spread of flame, fire propagation, toxicity etc. Introduce to the macro level perspective of fire hydrants: general behavior of materials, combination of fire retardant and non-combustible materials.

**Module II: HVAC Systems**

Introduce to the basic concepts of Air Conditioning, function, scope and purpose. Share relevant Indian BIS and ASHRAE standards. Study relationship of Human Comfort, Dry/Wet/Dew Bulb Temperature, Climatology principles, Psychrometric Chart Analysis, and study HVAC design considerations in typical building case.

**Module III: Energy Conservation Building Code**

Introduce to the model building code based on the energy conservation and sustainability. In general study the various systems of Building Envelope, Electrical Power Systems, Lightings, Solar Water Heating system, and Air Conditioning standards for office/ residential/ commercial buildings. Use of ICT to make understand the innovative concepts of energy conservation and other relevant building systems.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	1	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Fire Protection for the Design Professional, D. Jenson
- Industrial Fire Hazard Hand Book
- Industrial Fire Protection
- BIS CODES: 2189, 2190, 8096, 928, 957, 3614, 2175, 931, 494, 2171, 6382, 5896, 6070, 3844, 1648, 1646, 1526, 5495

## COMPUTER APPLICATIONS-II

Course Code: ARC2513

Credit Units: 03

### Course Objective:

To introduce and make students learn about graphic presentation tools and other editing and 3D drafting softwares

### Course Contents:

#### Module I: Use of Photo Editing Software Workshop

Photo editing as well as preparation of 2-D presentations on Photoshop.

#### Module II: Introduction to Revit/ SketchUp (3-D) Software

Introduce to the 3D softwares for the graphic design, building planning. Explain the various ways to deal with the graphic drawings. Introduce to 3D drawing concepts. Students learn the ability to Model, Editing and modification work to be done in the graphic presentation.

#### Module III: 3D Workshop

Practice on the various Revit and Sketch Up commands through software User Interface. Conduct 3D Skills Workshop to train the students. Introduce to the Modelling skills and minimize errors in the presentation skills.

### Examination Scheme:

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
I	II													
2	0	2	0	10	10	25	5	50	50	0	50	100	3	3

### References:

- Manuals of Autocad – Autodesk Inc.
- Computer graphics and design, Radhakrishnan
- Engineering Drawing, Sidiquee, Khan, Ahmad

# Syllabus - Sixth Semester

## ARCHITECTURAL DESIGN-VI

**Course Code: ARC2601**

**Credit Units: 07**

**Course Objective:**

- To create an awareness with regard to the design of green buildings and sustainable architecture.
- To inculcate the importance of services integration and construction in spatial planning in the context of design of High-rise buildings and service intensive buildings.
- To highlight on the importance of High rise buildings as elements of identity in urban areas and urban design principles that govern their design.
- To explore computer aided presentation techniques involving 2D and 3D drawings, walk through and models as required.

**Course Contents:**

Areas of concern/ focus:

- Green Building Concept
- Site Analysis
- Energy Efficiency
- Topography
- Interior
- Use of 3-D software's
- Building Services
- Urban Design
- socio-cultural aspects
- designing for the differently abled
- Building byelaws and rules
- Community oriented design
- appropriate materials and construction / locally available material
- Climatology
- Local Building Byelaws

**Module I: Design Exercise-I**

Suggested design problem: Commercial complex, Hospitals, Court Complex

**Module II: Design Exercise-II**

Suggested design problem: Engineering Colleges, Architecture School, Multi religious complex

*Note: Time problem should be consider as a CT-1*

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	1	1	3	10	10	25	5	50	00	50	50	100	7	12

**References:**

- Kevin Lynch, “Site Planning”, MIT Press, Cambridge, 1984. 2. MiliMazumdar, “Energy Efficient Buildings in India”, TERI, New Delhi, 2012
- Diane Tsang, “SPACE Shopping Mall”, Pace Publishing, 2011
- Lara Menzel, “Office Architecture and Design”, Braua Publishers 2009.
- Sheri Koones, “Prefabulous and Sustainable: Building and Customizing an affordable, Energy efficient home”, ABRAMS, 2010.
- Joseph De Chiara, Michael J. Crosbie, “Time Savers Standards for Building Types”, McGraw Hill Professional 2001.
- Ernst Neuferts, “Architects Data”, Blackwell, 2002.
- National Building Code of India, Vol 1-5, 2005.
- Daniel Williams, “Sustainable Design: Ecology, Architecture & Planning”, John Wiley & sons Inc, NJ, 2007. 5. Richard P. Dober, “Campus Architecture: Building in the Groves of Academe”, McGraw-Hill, 1996.

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY-VI

Course Code: ARC2602

Credit Units: 04

## Course Objective:

- To introduce the concepts of designing with steel structures and its components.
- To elucidate the role of steel ropes/strands in pre-stressing in concrete members.
- To enable students to understand and design components such as staircases with steel structural members.

## Course Contents:

### Module I: Introduction to Steel Structures

Introduction to Steel structures: Steel structural shapes, Introduction to IS 800; Rivets, Design of steel structural members, tension, compression and bending Members.

### Module II: Design of Steel Columns & Foundations

Theory of columns, slenderness ratio, design of axially loaded steel columns, design of built-up lacing and battened columns. Grillage Foundation.

### Module III: Design of Steel Beams

Design of laterally supported and unsupported beams. Beams subjected to bi-axial bending, built-up beams - design concepts with flanged plates.

### Module IV: Steel Connections

Concepts of connections, design of riveted and welded connections like beam end connections. Design of Steel Beams and Columns, Concepts of plate girders.

## Examination Scheme:

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	1	1	1	10	10	25	5	50	50	0	50	100	4	3

## References:

- Bhavikatti, S. S. (2010). *Design of Steel Structures*. I.K. International Publishing House.
- Duggal, S. K. (2000). *Design of Steel Structures*. Tata McGraw Hill Education.
- Ram, K. S. S. (2010). *Design of Steel Structures*. Pearson Education India.
- Shiyekar, M. R. (2011). *Limit State Design in Structural Steel*. PHI Learning Pvt Ltd.
- Subramanian, N. (2008). *Design of Steel Structures*. Oxford University Press.

## STRUCTURE-VI

**Course Code: ARC2609**

**Credit Units: 02**

**Course Objective:**

To understand the analysis of intermediate structures and their use in field in greater depth.

**Course Contents:**

**Module I: Theory of Beams and Frames**

Continuous beams, curved beams, portal frames, multistory building frames.

**Module II: Elevated Water Tanks**

Introduction of Tanks, Conical or Funnel Shaped Tanks.

**Module III: Shells, Floors and Trusses**

Shells, Hyperbolic, Parabolic, Folded Plates, Grid or Coffered Floors, Girders, Trusses.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials by M.V. Naik
- Strength of Materials – Khurmi R. S.
- Applied Mechanics and Strength of Materials – Khurmi R. S.
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure – Negi
- Structure in Architecture – Salvadori and Heller
- Mechanics of materials – E. P. Popov
- Indeterminate structural analysis – J. Sterling Kinney
- Basic structural analysis – C.S. Reddy
- Reinforced concrete structures – R. Park and T. Paulay
- Concrete technology- M.L. Gambhir
- Design of reinforced concrete structures- N. Krishna Raju
- IS: 456- 2000
- SP: 16- 1980
- Elements of Structure by Morgan
- Structures in Architecture by Salvadori
- Building Construction by Mackay WB Vol. 1-4
- Construction Technology by Chudley Vol. 1-6
- Elementary Building Construction by Mitchell
- Structure and Fabric by Everet

# RESEARCH-I

Course Code: ARC2610

Credit Units: 03

## Course Objective:

- Introduce students about research work
- To understand how the research work is done

## Course Contents:

### Module I: Foundations of Research

Meaning, Objectives, Motivation, Utility of research. – Understanding the language of research – Concept, Construct, Definition, Variable. Research Process

### Module II: Problem Identification & Formulation

Research Question – Investigation Question – Measurement Issues – Hypothesis – Qualities of a good Hypothesis – Null Hypothesis & Alternative Hypothesis. Hypothesis Testing – Logic & Importance.

### Module III: surveys

Types of surveys in details for various types of research

### Module IV: Qualitative and Quantitative Research

Qualitative research – Quantitative research definition and Concept

### Module V: Sampling

Concepts of Statistical Population, Sample, Sampling Frame, Sampling Error, Sample Size, Non-Response. Characteristics of a good sample. Probability Sample – Simple Random Sample, Systematic Sample, Stratified Random Sample & Multi-stage sampling. Determining size of the sample – Practical considerations in sampling and sample size.

### Module VI: Data Analysis

Univariate analysis (frequency tables, bar charts, pie charts, percentages),

### Module VII: Interpretation of Data and Paper Writing

Layout of a Research Paper, Journals in Computer Science, Impact factor of Journals, When and where to publish. Ethical issues related to publishing, Plagiarism and Self-Plagiarism.

## Examination Scheme:

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
2	0	2	0	10	10							25	5	50

## References:

- Business Research Methods – Donald Cooper & Pamela Schindler, TMGH, 9th edition
- Business Research Methods – Alan Bryman & Emma Bell, Oxford University Press.
- Research Methodology – C.R.Kothari

# BUILDING BYE-LAWS

**Course Code: ARC2611**

**Credit Units: 03**

**Course Objective:**

To study the development controls as applicable to the building design. To acquaint the students to comply with the municipal building byelaws, various permits and standard practices.

**Course Contents:**

**Module I: Introduction to Building Bye Laws**

Introduction to Building Bye Laws and regulation, their scope, relevance, general definitions and purpose such as building height, building line, FAR, Ground Coverage, set back line et all. Explain the role of a various statutory bodies governing the building works like development authorities, municipal corporations etc in implementing Byelaws. Briefly introduce to the concepts and practice of Master Plan, Development Plan, Interim-plan and understanding various land uses and related terminologies.

**Module II: Introduction to Codes of Practice**

Introduction to the various building codes in professional practice emphasizing the importance of codes and regulations to protect public health, safety and welfare and to ensure compliance with the local authority

**Module III: Application of Building Bye Laws**

Identify a particular city and study its building Byelaws in theory. Help interpret the information given in the municipal byelaws. Discuss the procedures of Byelaws Amendments, read & study Annexure and Appendices of a specific city. Application of Bye Laws likes structural safety, fire safety, earthquake safety, basement, electricity, water, and communication lines in relation to the building typology.

**Module IV: Studio Workshop**

Conduct studio exercise based on the present Architectural Design studio topic. Help student understand the application of building byelaws in to their design thinking process.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
3	0	0	0	10	10	25	5	50	50	0	50	100	3	3

**References:**

- Delhi Building Bye-Laws – Nabhi Publications
- D.D.A. – Delhi Master Plan
- National Building Code 2016 and relevant Indian Standards and Codes

# ESTIMATION, SPECIFICATION & COSTING

**Course Code: ARC2613**

**Credit Units: 03**

## **Course Objective:**

To familiarize the students with the theory and practice of estimation and quantity surveying in the building construction projects, modules are prepared to train the students in the real application. Ensure to develop the understanding of specification writing, estimation techniques and introduce to various tools and methodologies.

## **Course Contents:**

### **SPECIFICATION & COSTING**

#### **Module I: Introduction**

Introduce to the general definition, usage of specification, and principles and practice in the building construction. Introduce to the method of writing specification, Terminologies, CPWD Rate Index, form and sequence of clauses. Under take real case project to show the actual application of costing in the studio. Conduct workshop and demonstration. Use of ICT to make understand the concepts.

#### **Module II: Buildings Material Standard Specifications**

Introduce to the various building materials and their component. Writing detailed specification for various common building materials e.g., RCC, Bricks, Sand, Lime, Timber, Glass, Paints etc. Introduce to the quantity, item rates, contemporary building materials, and costing concepts. Familiarize the standard specification methods as per BIS, NBC and other institutions. Introduce the students to the specification methods for the various Building Components and items. Student presentations.

#### **Module III: Construction Specification**

Writing detailed technical specification for various building construction works. Introduce to the working drawings and technical detail drawings of the building construction.

### **ESTIMATION**

#### **Module IV: Introduction**

Introduction to the cost estimation in general, and definitions of terminologies related to the Estimation.

#### **Module V: Schedule of Rate Analysis**

Principles of Analysis of Rates for different building material, rates of labor and materials, rate analysis in different building works of public and private nature. Introduce to the market-based rates, standard specifications for the CPWD, PWD Cost Index.

#### **Module VI: Types of Estimates**

Types of estimates, abstract and detailed estimates; detail estimates – methods of estimating; taking out of various items; preparation of bill of quantities – use of schedule of rates; analysis of rate and break up of material requirements

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
3	1	0	0	10	10	25	5	50	50	0	50	100	3	3

**References:**

- A textbook of Estimating and Costing (Civil) by D.D. Kohli, Ar. R.C. Kohli, S. Chand Publications
- Estimating and Costing in Civil Engineering: B. N. Dutta
- Handbook on Building Economics and Productivity, Central Building Research Institute, Roorkee: S.C. Singh and G.C. Sofat
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar

# Syllabus - Seventh Semester

## ARCHITECTURAL DESIGN-VII

**Course Code: ARC2701**

**Credit Units: 08**

**Course Objective:**

- To create an awareness with regard to the design of green buildings and sustainable architecture.
- Integration of structures into design development
- To inculcate the Complex services integration and construction
- To integration of technology to make the building intelligent and secured
- To explore computer aided presentation techniques involving 2D and 3D drawings, walkthrough and models as required.

**Course Contents:**

Areas of concern/ focus:

- Green Building Concept
- Integration Of Structures As Design Element
- Complex Building Services And Their Load Calculation
- Modern And Innovative Technologies Used In The Building
- Security
- Use To Energy Software For Energy Simulation
- Use Of 3-D Software's
- Socio-Cultural Aspects
- Designing For The Differently Abled
- Building Byelaws And Rules
- Community Oriented Design
- Appropriate Materials And Construction / Locally Available Materia
- Climatology
- Local Building Byelaws

**Module-I: Design Exercise-I**

Design a building to achieve any green building rating system such as GRIHA, LEED, BREEM etc. and give the points achieved in the design at the end of semester.

Suggested design problem: 5 Star hotel, Multispecialty Hospitals etc

*Note: Time problem should be considered as a CT-1*

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	0	3	3	10	10	25	5	50	50	0	50	100	8	18

**References:**

- Kevin Lynch, "Site Planning", MIT Press, Cambridge, 1984. 2. MiliMazumdar, "Energy Efficient Buildings in India", TERI, New Delhi, 2012
- Diane Tsang, "SPACE Shopping Mall", Pace Publishing, 2011
- Lara Menzel, "Office Architecture and Design", Braua Publishers 2009.
- Sheri Koones, "Prefabulous and Sustainable: Building and Customizing an affordable, Energy efficient home", ABRAMS, 2010.
- Joseph De Chiara, Michael J. Crosbie, "Time Savers Standards for Building Types", McGraw Hill Professional 2001.
- Ernst Neuferts, "Architects Data", Blackwell, 2002.
- National Building Code of India, Vol 1-5, 2005.
- Daniel Williams, "Sustainable Design: Ecology, Architecture & Planning", John Wiley & sons Inc, NJ, 2007. 5. Richard P. Dober, "Campus Architecture: Building in the Groves of Academe", McGraw-Hill, 1996.

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY-VII

**Course Code: ARC2702**

**Credit Units: 04**

**Course Objective:**

To train the students to prepare detailed Working drawings for effective execution at construction site, preparation of integrated services drawings, and detailing for various types of drawings and methods of transmittals and record keeping.

**Course Contents:**

**Module I: Introduction to Working Drawing**

Introduction to the topic and its relevance in the construction field. Aspects such as – construction terminology, building bye-laws, requirements of submission and completion / compounding of projects to be discussed.

Making complete set of working drawings and details for a small two storied building and a multi-storied building designed in the previous semester, with necessary changes made as per the local bye-laws. List of drawings-

- Site Plan
- Foundation Layout and details
- All Floor Plans
- Elevations, Sections
- Doors and Windows schedule and details
- Electrical and Plumbing layouts
- Kitchen
- Toilet
- Staircase details
- Flooring Pattern
- Details of grills
- Parapet or railings
- Typical wall section with complete details.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
2	1	1	1	10	10	25	5	50	50	0	50	100	4	3

**References:**

- Building Construction – Materials by M.V. Naik
- Strength of Materials – Khurmi R. S.
- Applied Mechanics and Strength of Materials – Khurmi R. S.
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure – Negi
- Structure in Architecture – Salvadori and Heller
- Elements of Structure by Morgan
- Structures in Architecture by Salvadori
- Building Construction by Mackay WB Vol. 1-4
- Construction Technology by Chudley Vol. 1-6
- Elementary Building Construction by Mitchell
- Structure and Fabric by Everet

# STEEL STRUCTURE

**Course Code: ARC2713**

**Credit Units: 02**

**Course Objective:**

To understand the design of steel structures.

**Course Contents:**

**Module I: Design Principles**

Introduction to Design Specification for Steel Members, Bolted Connections, Welded Connections

**Module II: Structural Connections**

Beam to beam connections, beam to column connection, bolted bracket connection, welded crane bracket connection.

**Module III: Steel Column, Column Base and Foundation**

Design Of Laced Column, Battered Column , Design Of Slab Base And Gusseted Base

**Module IV: Flexural Member and Roof Trusses**

Laterally restrained beam, gantry girder, plate girder with -thick web plate and thin web plate  
Design of steel roof truss and tubular truss.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	0	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction – Materials by M.V. Naik
- Strength of Materials – Khurmi R. S.
- Applied Mechanics and Strength of Materials – Khurmi R. S.
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure – Negi
- Structure in Architecture – Salvadori and Heller
- Mechanics of materials – E. P. Popov
- Indeterminate structural analysis – J. Sterling Kinney
- Basic structural analysis – C.S. Reddy
- Reinforced concrete structures – R. Park and T. Paulay
- Concrete technology- M.L. Gambhir
- Design of reinforced concrete structures- N. Krishna Raju
- IS: 456- 2000
- SP: 16- 1980
- Elements of Structure by Morgan
- Structures in Architecture by Salvadori
- Building Construction by Mackay WB Vol. 1-4
- Construction Technology by Chudley Vol. 1-6
- Elementary Building Construction by Mitchell
- Structure and Fabric by Everet

## RESEARCH-II

**Course Code: ARC2714**

**Credit Units: 03**

**Course Objective:**

- To conduct a research work
- To publish a research paper

**Course Contents:**

**Module I: Finding a research topic**

Choose any topic of the interest in consultation to the faculty concern

**Module II: Research Problem Identification & Formulation**

Research Question – Investigation Question – Measurement Issues – Hypothesis – Qualities of a good Hypothesis –Null Hypothesis & Alternative Hypothesis. Hypothesis Testing – Logic & Importance.

Setting up aims, objective and methodology

**Module III: Literature reviews**

Review of research paper, books, journals etc related to the topic

**Module IV: Surveys and data collection**

Questionnaire to be prepared and Surveys to be conducted related to research. Other related data to be collected from appropriate resources.

**Module V: Data Analysis**

Collected data to be analyzed using proper software. frequency tables, bar charts, pie charts, percentages etc

**Module VI : Paper Writing**

Research paper writing in appropriate format. Ethical issues related to publishing, Plagiarism and Self-Plagiarism to be checked

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	0	2	0	10	10	25	5	50	00	50	50	100	3	00

**References:**

- Business Research Methods – Donald Cooper & Pamela Schindler, TMGH, 9th edition
- Business Research Methods – Alan Bryman & Emma Bell, Oxford University Press.
- Research Methodology – C.R.Kothari

**ADVANCED ARCHITECTURAL SERVICES  
(ADVANCED BUILDING SERVICES)  
(ESCALATORS, LIFTS, MECHANIZED PARKING AND ACOUSTICS)**

**Course Code: ARC2715**

**Credit Units: 02**

**Course Objective:**

To study the advance building services aspects in the complex building design environment. Introduce to the various building elements and their advance application in the built environment. Discuss the working of escalators and lifts including location and criteria for their design. Also introduce to the theory and practices of Acoustics. Understanding the scope, purpose and application of Acoustics in building interiors.

**Course Contents:**

**Module I: Escalators**

Basic Principles of Escalator working, definitions, NBC's recommendations, location and service, Method of working, various shapes and sizes available, sketches – plans, sections, elevations of different types of escalators including construction and installation details.

**Module II: Elevators/Lifts**

Basic Principles of Elevators working, definitions, NBC's recommendations, location and service, Method of working, various shapes and sizes available, sketches – plans, sections, elevations of different types of lifts including construction and installation details. Student Presentation.

**Module III: Mechanized Parking System**

Basic Principles of Mechanized Parking system working, definitions, NBC's recommendations, location and service, Method of working, various shapes and sizes available, sketches of different types of parking. Student Presentation.

**Module IV: Acoustics**

Properties of audible sound, intensity and loudness, frequency and pitch, quality Reflection, absorption, transmission, diffusion, diffraction of sound, Common acoustical defects: Echo, sound-foci, dead spots, sound shadows, resonance, insufficient loudness, external noise, reverberation and reverberation time

Sound absorbing materials – description and characteristics, types of absorbents and reflectors Acoustical design for various enclosures. e.g., speech, music, conference, studios etc.

Environmental noise control: noise sources, airborne and structure-borne noise, transmission of noise, methods of environmental noise control, control of mechanical noise and vibrations, General idea of sound insulation. Noise control in specific types of buildings like – auditoriums, residential buildings, hotels, school, hospitals, offices, libraries.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment			External Assessment							
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
2	1	0	0	10	10	25	5	50	50	0	50	100	2	3

**References:**

- Building Construction - B.C. Punmia
- Building Construction - Rangawalla
- Building Construction and Materials – Gurcharan Singh
- Architectural Graphics – Ching Frank
- Modern Air-Conditioning, Heating and Ventilation: Carrer and G. Pitman.
- Air Conditioning and Ventilation, Servems and Fellows, John Wiley
- Architectural Acoustics: E. David
- An Introduction to Building Physics: Dr. V. Narasimhan, CBRI, 1974

# LEED LAB

**Course Code: ARC2717**

**Credit Units: 04**

## **Course Objective:**

Advancing the concept of our buildings and to acquaint the student with the factors to be taken into consideration to understand the applications of an intelligent building. Familiarize the students to the Green Building rating systems, design processes, regulations and prevailing best practices.

## **Course Contents:**

### **Module I: Introduction to Green Building & Green Building Rating Systems**

Introduction to Course, Syllabus and assessment, Fundamental concepts of Green Building Design and Sustainability. Green Rating regime and their scope (regional and global), Policies and legislations

### **Module II: LEED Lab & Processes**

LEED Systems: Organization, fundamentals & Role USGBC/GBCI, Structure of LEED rating (credit, prerequisites and requirements) and Impact categories, LEED Certification & registration process, What, How and where to collect data for LEED certification

### **Module III: Site, Location and Transportation**

Scope and criterion of sustainable site, Transport and resource footprint

### **Module IV: Buildings Material and Resources**

Fundamental concepts (LCA), Waste management, 3Rs and Health), Procurement, declarations and documentations of Materials according to requirement of LEED certification

### **Module V: Energy and Climate**

Basic concepts I (Building loads, Energy efficiency, Environmental concerns), Basic concept II (Electrical systems, Visual & thermal comfort and other concepts), Energy commissioning & performance management Energy audit process, equipment and tools

### **Module VI: Water Efficiency**

Water use pattern, source and conservation scope (including water harvesting and treatment), Water flow, fixtures and plumbing networks and water efficient appliances, Water Audit: Performance management and monitoring, LEED requirement and documentation plan

### **Module VII: Indoor Environment & Human Comfort**

Fundamentals of Indoors environmental quality (ventilation, air quality, indoor emission, green cleaning) Health and occupational comfort (Natural lighting, Thermal, Quality view & assessment-survey)

### **Module VIII: LEED Arc**

Basic concepts and pre-requisites, Buildings Data Analysis, Demonstration of input Data in Arc Platform and create output result for the 5 sustainability indicators

### **Module IX: Project Communication**

Environmental/Building codes, Impact of built environment, sustainable & regional design Project Documentation follow-up

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
3	0	2	0	10	10	25	5	50	50	0	50	100	4	3

**References:**

- Intelligent Fuzzy Optimal Control of Building Structures – Engg. Str. V-20n3, March '98, pp. 184.
- Intelligent Controller with Closing Problems for Building Systems International Conference, Proceeding, 1998.
- Intelligent Component Health Monitoring System.
- Integration of Communication Networks Automation in Construction, V-6n 5-3
- Intelligent Building System for Airport, ASHRAE Journal V-39 N 11, Nov. '97 pp. 31-35
- Maintenance System of Electrical Facilities Proceedings of the Annual Conference, 1997.
- Energy-efficient buildings in India, The Energy and Resources Institute (TERI), 2001
- GRIHA MANUAL: Five volume set, The Energy and Resources Institute (TERI), 2011
- Green Building: Guidebook for Sustainable Architecture, Sringer, ed 2010
- Green Building A to Z: Understanding the Language of Green Building, New Society Publishers, 2007

# INTERIOR DESIGN

**Course Code: ARC2718**

**Credit Units: 03**

**Course Objective:**

To equip the students with varied aspects of theory and practice of Interior Design, and develop skills to deal with diverse interior spaces. Students get opportunity to understand qualities of spaces and develop their skills in designing for functional and meaningful interior space.

**Course Contents:**

**Module I: Introduction and basic principles of design**

Purpose, scope, objectives, history and importance of Interior Design. Elements and principles of interior design and their application in the context of buildings. Aesthetic order, functional Value and Psychological impact of various elements of Interior Design. Application of Colour, Texture, Landscaping, Artificial and Natural Lighting in the Building interiors.

**Module II: Principles and Elements of Interior Design**

Elements of Interior Design, Role in interiors. Space making elements like wall, column, partition screen, floor, furniture, interior landscaping etc., their design value, colour theories and schemes, light

**Module III: Understanding Furniture work and furnishings in Interior**

Understanding furniture layout, furniture design with the construction technique, types of furniture and their usage, construction materials and fabrics used in furniture designing, cost estimation, understanding works of great masters. Furniture, Furnishings, Fabrics, Murals, Paintings, Sculpture, Lighting Fixtures, Floor coverings, Wall coverings and related materials. Study of furniture designs, Built-in furniture, Movable furniture, Modular furniture.

**Module IV: Modern trends in Interior design**

Understanding and designing modern interiors using modern materials and techniques. Study Report of an existing DESIGN PROJECT. Space organization in interiors--presentation of the complete interior scheme of a given projects such as Library, Public Halls, Conference Room, Commercial buildings etc.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
1	0	1	1	10	10	25	5	50	50	0	50	100	3	3

**References:**

- National Building Code
- Zenkin -Human Dimensions and Interior Design
- Interior Design and Space Planning-Time Saver Standard-McGraw Hill
- Interior Design- Indoor and outdoor Landscaping-Archi World Company.
- Jain Shashi, "Creative Interior Design of Enclosed Spaces, Management Publishers Company.
- De Chaira/ Panero, "Time Saver Standard for Interior Design Space Planning, Mc Graw Hill.

## Syllabus - Eighth Semester

### BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY-VIII

Course Code: ARC2801

Credit Units: 04

**Course Objective:**

- Understanding different technology used in latest construction methods
- Studying modern construction techniques used.

**Course Contents:**

**Module I: Introduction to Pre-Fabrication Technology**

Introduction to the topic and its relevance in the construction field. Aspects such as – construction terminology, types, Applications, Detailing. Site visits and material collection from Pre-Fabrication manufacturing units and live examples.

**Module II: Introduction to Pre-Stressed Technology**

Introduction to the topic and its relevance in the construction field in both pre-tensioning and post tensioning. Aspects such as – construction terminology, types, Applications, Detailing. Site visits and material collection from Pre-Stressed manufacturing units and live examples.

**Module III: Introduction to Advanced Structural Designs**

Introduction to the Diagrid Structures, domes structures, arches. Introduction to the Design of culverts, overhead water tanks.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
1	1	1	3	10	10	25	5	50	00	50	50	100	4	3

**References:**

- Building Construction – Materials by M.V. Naik
- Strength of Materials – Khurmi R. S.
- Applied Mechanics and Strength of Materials – Khurmi R. S.
- Civil Engineering Handbook – P.N. Khanna
- R.C.C. Design – Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure – Negi
- Structure in Architecture – Salvadori and Heller
- Elements of Structure by Morgan
- Structures in Architecture by Salvadori
- Building Construction by Mackay WB Vol. 1-4
- Construction Technology by Chudley Vol. 1-6
- Elementary Building Construction by Mitchell
- Structure and Fabric by Everet

## ARCHITECTURAL DESIGN-VIII

**Course Code: ARC2809**

**Credit Units: 08**

**Course Objective:**

- To acquaint the students with large scale housing design along with other land use development in an urban context, phasing and development.
- To expose the students to advance building services and systems and to urban development regulations, building bye-laws and architectural controls.
- To understand the continuity and dynamics of urban form with a thrust on the interrelationships between the disciplines of architecture, urban design and town planning
- To understand in specific components/issues such as public spaces, physical infrastructure, socio-cultural aspects- heritage, gender, class, dynamics of urban growth

**Course Contents:**

Areas of concern/ focus:

- Land Use and land development
- exploration of relationship between building and larger context
- Green Building Concept
- Site Analysis
- Use of 3-D software's
- Building Services
- Urban Design
- socio-cultural aspects
- designing for the differently abled
- Building byelaws and rules
- Community oriented design
- appropriate materials and construction / locally available material
- Climatology
- Local Building Byelaws

**Module-I: Design Exercise-I**

Suggested design problem: Redevelopment scheme, Development projects – University design and Planning, Rehabilitation scheme, City Centers, District Centers, Urban Improvement Projects, urban waterfront development, multi-use urban complexes.

*Note: Time problem should be consider as a CT-1*

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
I	II													
2	0	3	3	10	10	25	5	50	00	50	50	100	8	3

**References:**

- Jonathan Barnett, “An Introduction to Urban Design”, Harper & Row, 1982
- Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999.
- I. Jawgeih, “Life between Buildings”, Using Public Space, ArkitektensForleg 1987.
- Donald Watson, “Time Savers Standard for Urban Design”, McGraw Hill, 2005.
- Malcolm Moor, “Urban design Futures”, Routledge, 2006.
- Edmund Bacon, “Design of Cities”, Penguin, 1976
- Gordon Cullen, “The Concise Townscape”, The Architectural Press, 1978
- Lawrence Halprin, “Cities”, Revised Edition, MIT Press 1972.
- Gosling and Maitland, “Urban Design”, St. Martin’s Press, 1984
- Kevin Lynch, “Site Planning”, MIT Press, Cambridge 1967

# CONSTRUCTION MANAGEMENT

**Course Code: ARC2810**

**Credit Units: 03**

**Course Objective:**

To equip students with a practical approach to implement building projects, basic knowledge about construction industry, project management techniques needed for managing and coordinating building projects in a professional manner.

**Course Contents:**

**Module I: Introduction to Pre-Fabrication Technology**

Introduction to project management, construction industry, stakeholders, roles, responsibilities and functional relationships, Construction projects – objectives and lifecycle, existing construction practices & project management systems, Project Team, organization, roles, responsibilities. Concepts of project planning, scheduling & controlling. Project scale and construction technology, human aspects in managing projects.

**Module II: Project Planning and Scheduling**

Inputs for project planning, defining activities and their interdependency, time and resource estimation. Work breakdown structures. Linear Scheduling methods - bar charts, LOB, their limitations. Principles, definitions of network based scheduling methods: CPM, PERT. Network representation, Network analysis – forward and backward passes.

**Module III: Project Monitoring and Control**

Site layout and organization, Site investigations. Quality tests for construction material and processes. Quality control inspections. Project progress tracking. Crashing Project Schedules, its impact on time, cost and quality. Project direct and indirect costs. Safety in Construction Projects.

**Module IV: Resources Management and Value Engineering**

Methods of material/resource estimation and management, Resources scheduling and levelling. Labour welfare, applicable labour Legislations. Construction equipment types, characteristics & applications. Value engineering, its application in building design and construction.

**Module V: Contracts and Tenders**

Types of building contracts, their merits and de-merits. Types of building tenders, contents of tender documents, tendering process. General conditions of contract, security deposits, interim certificates, defect liability periods, retention amounts, mobilization money and virtual completion.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
3	0	0	0	10	10	25	5	50	50	00	50	100	3	3

**References:**

- Callahan, M. T., Quackenbush, D. G., & Rowings, J. E. (1992).
- Construction Project Scheduling. McGraw-Hill. 2. Chitkara, K. K. (2004).
- Construction Project Management: Planning, Scheduling and Controlling. Tata McGraw–Hill Education. 3. O'Brien, J. J., and Plotnick, F. L. (2009).
- CPM in Construction Management. McGraw-Hill Professional.
- Punmia, B. C., and Khandelwal, K. K. (2006).
- Project planning and control with PERT and CPM. New Delhi : Laxmi Publications.
- Wiest, J. D., and Levy, F. K. (1982).
- A Management Guide to PERT/CPM. New Delhi : Prentice Hall of India.

# PROFESSIONAL PRACTICE-I

**Course Code: ARC2811**

**Credit Units: 03**

**Course Objective:**

To acquaint the students with the responsibilities of Architect's code of conduct, role of Council of Architecture in Architectural practice. In general, help understand the office structure and administration of an Architect's office, prepare Tenders, contracts terms, agreement etc.

**Course Contents:**

**Module I: Role of Professional Bodies**

Role of different bodies i.e. COA, IIA, Uttar Pradesh Architect Association, their working constitution and bye-laws, categories of membership and election procedures.

**Module II: Architect's Act 1972 & Office administration**

Introduce to the relevant Act and procedures of membership. Office set up and administration, Filing and recording, nature of partnership, registration of firm and dissolution, copy rights of drawings, practice procedures and conduct etc.

**Module III: Architect Fees and Professional code conduct**

Conditions of engagement of Architect, discuss the Duties, Responsibilities, Liabilities of the Architect profession, Fee (scale of charges), mode of payment etc. Clauses governing conduct of professional practice.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
3	0	0	0	10	10	25	5	50	50	0	50	100	3	3

**References:**

- COA document of Architect's Act 1972
- Architectural Practice in India – Prof. Madhav Deobhakta
- Construction Project Management – K.K. Chilkar
- Construction Planning and Management – M.B. Dhir & S.P. Ghilot
- Professional Practice in India – S.K. Sahu
- Code of Architectural Practice – B.M. Basu
- Project Management with CPM and PERT – Moder and Philipese
- Construction Method and Techniques – Mullick Mullind

# DISSERTATION

**Course Code: ARC2837**

**Credit Units: 04**

**Course Objective:**

The primary objective of this subject is to enable students to establish a strong theoretical foundation, clarity of thought and also to orient the students to structured research in a focused manner. The process of study shall enable students to conduct in depth analysis and objective research on a topic of their interest. Students may be encouraged to select the topic which may eventually culminate in the Architectural Design Thesis in the subsequent semester.

**Course Contents:**

**Module I: Students work**

Students may choose a topic related to Architecture and allied subjects. The topics must be vetted by the faculty. Emphasis must be on critical understanding, logical reasoning and structured writing. Students may be encouraged to select the topic which may eventually culminate in the Architectural Design Thesis of the subsequent semester. Students can thus utilise this as an opportunity for pre-Thesis study, amounting to literature review and relevant case studies which are otherwise required for Thesis.

The research work has to be presented in form of written report and seminar in front of a jury.

The student work must include the following:

- Aim, objective and Methodology
- Research Methods used to obtain information
- Primary and secondary case studies/ Data Collection
- Data Analysis (Analyze Quantitative/ Qualitative information)
- Result / Recommendation / Design
- Conclusion
- Reference

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
1	0	0	2	10	10	25	5	50	50	0	50	100	4	3

**References:**

- Anderson, J. and Poole, M. (1998). Thesis and assignment writing. Brisbane : John Wiley.
- Borden, I. and Ray, K. R. (2006). The dissertation: an architecture student's handbook. 2 nd Ed. Oxford : Architectural Press.
- Fink, A. (1998). Conducting research literature reviews: from paper to the Internet. Thousand Oaks : Sage.
- Murray, R. (2005). Writing for academic journals. Berkshire: Maidenhead, Open University Press.

## MANAGEMENT & MARKETING SKILLS

**Course Code: ARC2813**

**Credit Units: 03**

**Course Objective:**

- To impart the students latest and relevant knowledge from the field of management theory and practice.
- To provide opportunities to the students for developing necessary managerial skills.

**Course Contents:**

**Module-I: Basic Concepts of Management**

Definition, Need and Scope, Introduction to Management Science, Theory & Practice, Environment of Management, Managers & Entrepreneurs, Managerial Roles & Skills, Manager's Social & Ethical Responsibilities.

**Module-II: Functions of Management Planning**

Concept, Nature, Importance, Steps, Limitations, Management by objectives Organizing - Concept, Nature, Importance, Principles, Centralization, Decentralization, Organization Structures, Line and Staff Authority, Functional, Leadership & Management, Product, Matrix, Geographical, Customer, New Forms of Organization – Virtual, Organizations as Networks - Types of Network. Organizations/Clusters – Self Organizing Systems. Organizational Designs Staffing - Concept, Nature, Importance, Steps. Concept of knowledge worker. Directing – Concept, Nature, Importance. Controlling - Concept, Nature, Importance, Process of controlling, Control Techniques.

**Module-III: Financial Management**

Cost of project, Means of finance, Estimates of sales and production, Cost of production, Working capital requirement and its funding, Profitability projections, Break Even Point(BEP), Projected cash flow statement, Projected balance sheet, Project profitability at market prices, Techniques of financial appraisal, Financial risk and over-all financial viability of the project through Internal Rate of Return (IRR)

**Module-IV: Marketing Management and Skills**

Introduction to Marketing concept - Evolution of marketing & customer orientation, Marketing Environment and Evaluation of Market opportunities, Market research & Marketing Information Systems, Demand forecasting, Market potential analysis, Product Life cycle, New Product development process.

**Module-V: Marketing Environment and Planning**

Promotion decisions, Integrated Marketing communications concept, Communication tools, Contents of Marketing Plan, Developing Marketing Plan for variety of goods and services, Promotion decisions, Integrated Marketing communications concept, Communication tools, Personal selling & Sales management

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment			External Assessment							
				CT		TA	A	Total	Theory/Studio	VIVA/Practical				Total
				I	II									
3	0	0	0	10	10	25	5	50	50	0	50	100	3	3

**References:**

- Essentials of Management – Koontz – TMGH
- Essentials of Management- Thomson Southwestern, Andrew J. Dubrin
- Principles & Practices of Management - Saxena
- Modern management: concepts and skills- Samuel C. Certo and Tervis Certo,
- Principles and Practices of Management - Shejwalkar and Ghanekar
- Management Concepts & Practices – Hannagan
- Managerial Economics – D. Salvatore, McGraw Hill, New Delhi.
- Managerial Economics – Pearson and Lewis, Prentice Hall, New Delhi
- Principles of Marketing - Philip Kotler and Gary Armstrong
- Fundamentals of Marketing - Stanton
- Marketing Management – Rajan Saxena

# ARCHITECTURAL JOURNALISM

**Course Code: ARC2814**

**Credit Units: 03**

**Course Objective:**

- To make students aware about Architectural Journalism
- To encourage them for Architectural writing, Documentation and Page Composition
- To familiarize students in preparation of Book Reviews and Articles.

**Course Contents:**

**Module I: Introduction to Architectural Journalism**

What is Journalism and why it is important? Relation between Architecture and Journalism. Looking at the ways design and the built environment are covered in the media today Reading a broad range of contemporary and historical writings by journalists and critics and discuss how these stories reveal different approaches, attitudes, and biases in covering design.

**Module II: Introduction to Architectural Writing**

Writing on different kinds of articles - from news stories to critical essays on particular buildings and social issues. Sometimes students will report on buildings under construction and other times they will reflect on and criticize projects that are completed. Learning how to gather information and do research for stories and then write various kinds of articles about built environment in Architecture, which will help them to understand the built environment and express their ideas on it.

**Module III: The state of Architectural Criticism**

Introduction to Criticism and Importance of Criticism. Relationship between Architecture and Criticism. Reading the various articles from the magazines, newspapers and websites about the built environment to understand the criticism and social commentary. Failures of Architectural Criticism. Analysis of various critical themes, and their comparison and learn how to criticize a built environment in various aspects and writing about criticism.

**Module IV: Structure of Architectural Journals& Photo Journalism**

Learning of documenting the collected information. Formatting, page composition, editing write-ups, content writing. Learning the techniques of clicking photographs through specific angles of built environment and their editing and modification. Learning the technique of how the photographs are supporting the write-ups about built environment, to help them understand the expression of pictorial, verbal and visual relationship of architecture journalism.

**Module V: The Built Environment &How We Live Today?**

Looking at and explaining a building in today's scenario. What's happening now and what should be the future. Read article and write an essay on recent projects. Writing about the new technologies in today's architecture and new construction techniques.

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical	Total			
				I	II									
3	0	0	0	10	10	25	5	50	50	0	50	100	3	3

**References:**

- Dave Sounders, Professional Advertising Photography, Merchurst, London 1988
- 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
- Architecture and the Journalism of Ideas by Bender, Thomas
- Architectural Criticism and Journalism by Mohammad al-Asad w/ Majd Musa
- Nieman Reports: Architectural Criticism: Dead or Alive by Blair Kamin.
- The Failures of Architecture Criticism, by Lance Hosey in the Huffington Post.
- Writing Architecture: A Practical Guide to Clear Communication about the Built Environment, by Carter Wiseman

# Syllabus - Ninth Semester

## THESIS

**Course Code: ARC2901**

**Credit Units: 18**

**Course Objective:**

- To prepare a student to independently handle and present all aspects of an architectural design, from its evolution to final solution in totality.
- To understand the importance of the evolutionary stages of a design process and various techniques required for a successful presentation of an architectural design.
- To develop in students the ability to handle specific aspects / thrust area of design relevant to the topic.

**Introduction**

- The multiple challenges of ‘built environment’ offer unlimited scope for the choice of an architectural design thesis. The selection of the thesis subject may result either from issue/s involved, or from the challenges of design, or the inherent and acquired aptitude of a student, which he/she wishes to perfect and present. The variety of the intentions give students the choice to select the topic of the thesis from a purely hypothetical to a ‘live’ program, as long as the topic can result in tangible ‘built environment’ solution.
- It should also be kept in mind that the chosen project should have a building design component of at least 10000sq m built up area apart from the other focus areas. The minimum area requirement for the thesis project can be relaxed depending upon the type of project and the thesis committee will be having final say in this matter.
- For reasons of maintenance of uniformity in results and standards, the thesis presentation shall be in two distinct compartments: a report comprising of all the preliminary studies required for the thesis topic, and the final design solution.
- The Thesis report shall consist of all relevant contextual studies: of user, place and time to enable the formulation of design criteria.
- The design solution shall be in the form of drawings and models of the concept and design and shall further include the presentation of at least one specific aspect relevant to the selected topic in complete detail.
- The report, in duplicate, shall be submitted in bound form together with prints/photographs of all the drawings and model/s.
- All relevant/ pertinent drawings, sketches, models from previous stages to be put up for the jury to show evolution of design.

<b>Stage 1</b>	Thesis plan; Project brief; Inventory and Site Study; Site Analysis; Selection Criteria of Case Studies and Literature Studies – Their critical Analysis and Inferences; Development of the Design Criteria for the selected thesis project.
<b>Stage 2</b>	Revised Design Criteria; Concept and Sketch Design through drawings and models.
<b>Stage 3</b>	Design development in form of Site Plan(s), floor Plan(s), Sections and Elevations, Views and working Models fully explaining the design, Structural systems, Services Compliance. Selection of Elective*; Criteria, Objectives, Methods, Scope and Limitations.
<b>Stage 4</b>	Finalized Detailed Drawings Complete with Electives and Models with Final Thesis Report

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
3	6	0	10	10	25	5	50	0	50	50	100	18	NA	

## THESIS ELECTIVE

**Course Code: ARC2902**

**Credit Units: 04**

- Landscape
- Interior Design
- Evaluation & Estimating Costing
- Working Drawing
- Structure Design
- Fire Escape & Fire Fighting
- Electrical Services & Lighting Services
- Plumbing Services
- Acoustics
- HVAC
- Lift Services
- Furniture Design

### Examination Scheme:

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
0	0	2	2	10	10	25	5	50	0	50	50	100	4	NA

- A softcopy of drawings need to be submitted by the student at each stage to check plagiarism.
- Two Electives to be selected judiciously in consultation with the respective thesis guide and should be work in detail for minimum 1000 square meter of area.

# ENTREPRENEURSHIP SKILLS FOR ARCHITECTS

**Course Code: ARC2903**

**Credit Units: 02**

**Course Outline:**

This module enables the students to learn the basics of managing an office and techniques for office management along with human resource management and work management.

**Course Objectives:**

The students should be familiar with organising their own setup. Learn aspects related to issuing, approval, record keeping etc.

**Course Contents:**

**Module I: Introduction to Architect's office**

Introduction, Meaning and Definition, Importance & functions of office, Duties & qualities of office manager, Office Systems & Routines, Meaning and importance of systems and Routines, Importance of organization structure, Types of organization structure, Office Accommodation & Work Environment, Factors influencing choice of office accommodation. Meaning and definition of working environment, Factors affecting working environment

**Module II: Record Management**

Introduction to Record Management, Principles of Record Keeping & Filing, Different types of filing systems, indexing, Safety and Security, Importance of safety & security, Measures to ensure safety and security

**Module III: Architects office and office Management**

Architects office and office, Management. Interaction with the consultants, Role & Duties of Architect as an Employer or Employee, Types of Clients, Types of Firms. How Clients Select Architects

**Module IV: Architectural Practice and role of regulatory bodies**

International Architectural practice and role of Various Statutory / Regulatory bodies in licensing like RIBA, AIA, etc

**Examination Scheme:**

Periods				Evaluation Scheme								Total Marks	Credits	Duration of Exam (hr)
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/Studio	VIVA/Practical	Total			
				I	II									
2	1	0	0	10	10	25	5	50	50	0	50	100	2	3

## PROFESSIONAL PRACTICE-II

**Course Code: ARC2904**

**Credit Units: 03**

**Course Objective:**

- To acquaint the students with the responsibilities of Architect's duty and the Society around the professional practices in general.
- To help understand the building assets, purpose & scope valuation, and administration of an Architect's office, Tenders and contract processes.

**Course Contents:**

**Module I: Architect & Society**

Study of this subject is to acquaint the students, while giving basic information, with various aspects of the profession and his responsibilities towards profession, clients and society. Introduce subject matter related to the Nature of profession, practices and its importance in the Architect's community. Discuss the Architectural services and responsibilities in relationship to the Client and the Society at large. Share the important considerations and criteria for engaging Architectural services.

**Module II: Tendering and Contract**

Tendering - Types of tenders and tender documents, tender drafts notices, Inviting Tenders, Procedure of opening and selection process and report of owner.

Contract – Types, conditions of contract – Earnest money, Security deposit, Retention money, Mobilization fund, Bank Guarantee, Architect's Instructions, Defects, Certificates and payments, Penalties, Insurance, Liquidated damages, Termination of contract, breach of contract.

**Module III: Valuation**

Introduction, Techniques, elements and factors affecting valuation, Methods, Types – renewal or lease/ extension of lease, standard rent, easement right, dilapidation, Property valuation techniques, circle rate analysis, comparable cost of scale. Share knowledge on the concepts of property purchase and mortgage, Goods and Service Tax, Capital gain tax, wealth tax, property tax and other taxes etc.

**Examination Scheme:**

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment			External Assessment							
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
3	1	0	0	10	10	25	5	50	50	0	50	100	3	3

**References:**

- COA document of Architect's Act 1972
- Architectural Practice in India – Prof. Madhav Deobhakta
- Construction Project Management – K.K. Chilkar
- Construction Planning and Management – M.B. Dhir & S.P. Ghilot
- Professional Practice in India – S.K. Sahu
- Code of Architectural Practice – B.M. Basu
- Project Management with CPM and PERT – Moder and Philipese
- Construction Method and Techniques – Mullick Mullind

# Syllabus - Tenth Semester

## PRACTICAL TRAINING

Course Code: ARC2037

Credit Units: 15

Each student will be required to proceed on 'Practical Training' for the IXth semester after appearing in the VIII semester examination. The Principal/Head of Department of Architecture of the concerned Institute will approve the office of the 'Practical-Training' for the student.

### Course Objective:

- The aim of the 'Practical Training' is to enable the students to gain the kind and range of practical experience which will prepare them for their likely responsibilities, immediately after qualifying B. Arch. Course.
- The 'Practical Training' should be regarded as an important academic activity. However good the arrangement of training may be, the trainee student, still, has the responsibility to use his own initiative in making the best use of the opportunities which he/she gets during training period and prepare himself/herself for the profession.
- The student should try to seek a variety of experiences in his/her 'Training office' to acquaint himself/herself with various works, procedures etc. of building trade.

### Guidelines for Student Trainee

#### 1. Criteria for selection of a Training Office:

- In case of proprietorship firm, the proprietor shall be an architect; also, the firm shall have at least two or more architects as employee/associates.
- In case of 'Partnership' / 'Pvt. Ltd.' Firms, at least one of the partner/directors shall be an architect, and the firm shall have at least one or more architects as Partner/director/employee/ associate.
- In case of a 'Public-sector' / 'State or Central Government office/academic institute or a multinational organization', there shall be a separate wing for architectural consultancy works.
- The said architect (Proprietor/Partner/Director/Head of Department/Chief Architect etc.) shall have at least 10 years of working experience and the organization should have a variety of projects.

#### 2. Working Relationship between Architect and Trainee:

- The architect shall provide enough jobs to the trainee to keep him/her occupied.
- The Architect shall expose the trainee to difference aspects of professional practice. The tasks given to the trainee shall include the following-
- Preparation of:
  - Sketch designs, presentation drawings etc.
  - Municipal drawings according to the byelaws.
  - Workings drawings and details.
  - Estimates, bill of quantities & specifications.
- Discussions with
  - Clients.
  - Structural Consultants.
  - Services Consultants.
- Inspection and management of site.
- Preparation of
  - Models, perspectives and photographs.
  - Reports, progress charts etc.
- Other administrative works.

### **3. Honorarium/Stipend**

- The architects usually pay some amount as honorarium/stipend to meet out of pocket expenditure to the trainee. The Institute/College of the student shall have no objection if the trainees accept/receive such honorarium/stipend.
- The mode and amount of the honorarium shall depend upon the office and be based upon a mutual agreement between the employing architect and the trainee. However it shall neither be a claim of the trainee nor binding on the architect but in order of professionalism and to maintain the dignity of profession, the training office of architects pay a respectable amount as stipend/honorarium.
- The Institute/Training and Placement cell of the Institute shall not in any way be responsible for the payment against any sorts of damages, whatsoever.

### **4. Code of conduct for the trainee**

- He/she shall abide by the rules, regulations and general instructions of the office/firm.
- He/she shall remain punctual and regular in attendance.
- He/she shall make all efforts to learn the work involved in the profession, and if so required for work, shall attend the office beyond the scheduled time in the office.
- He/she shall respect and obey the senior members of the office/firm.
- He/she shall take up the job with full responsibility and show utmost interest in the work allotted.
- He/she shall inform the institute/training and placement cell about joining in the training office, its address and contact numbers. He/she shall also inform the address of the accommodation acquired during the training period.
- He/she shall remain in regular touch with the institute/ 'Training and Placement Cell' and shall keep the
- Training and Placement Cell fully informed about his/her progress in the training office.
- In case of any complaint or misconduct, the Institute/Training and Placement Cell may take suitable and strict action against the student.

### **5. Arranging/Fixing-up the Training office**

- The Amity School of Architecture and Planning, directly or through the 'Training and Placement Cell' of the Institute shall provide a list of offices, along with their addresses of some well-established and recognized architects. Addition, alteration and deletion in such a list may be made from time to time in conformity to 'Criteria' as laid down for selection of a training office.
- After seeking advice from 'Training and Placement Cell', the student shall make his/her options available to the Training and Placement Cell.
- With the help of 'Training and Placement Cell', the student shall make all efforts to settle his/her appointment as trainee with an established and recognized Indian or International architect.

### **6. Joining and Leaving the Training Office**

- The trainee is expected to join the training office on the scheduled date and submit his 'Joining Report' on the letterhead of the office duly signed by Head of the Training to the Institute in the Performa prescribed for the purpose and contained in the Log Book.
- The trainee must obtain a 'No Dues Certificate' duly and get relieved from the office at the end of the training period or before changing the 'Training Office'. The trainee must submit this 'No Dues Certificate' along with the Log Book.

### **7. Change of Training Office**

- In case of any emergency, a trainee may be permitted to change the training office/place of training once only during the entire period of training. He/she shall inform the

Principal/Director/Head of Department/Officer in-charge of the 'Training and Placement Cell', and seek prior permission for such a change.

- The total duration of the practical training shall be the sum of the period of stay in different offices. It shall be in conformity with the 'Duration of Training' as prescribed in the 'Ordinances, Scheme of Examination & Syllabus' of the Amity University Haryana.

#### 8. Final Submissions

- After completion of practical training, the trainee is required to submit the following to the parent Institute.
- 'Certificate' of successful completion of the practical training mentioning the attendance in percentage, from the architect.
- 'Daily Diary' with details of the day to day work record, which will be returned to the student after assessment and viva voce examination. The suggested 'Proforma' of the page of the daily diary is available in the prescribed 'Log-Book'.
- 'Training report' supplemented with the prints and documents of work done during practical training. The prints and documents shall be obtained with the permission of the Training office and shall be duly signed by the 'Supervisor'.
- Training report shall be submitted in two copies. First copy shall be returned to the student after assessment of sessional marks and viva voce examination. The second copy shall be retained by the Training and Placement Cell/library. These shall be presented in A-4 size with ring binding.

#### 9. Failures:

- In case the student/trainee remains unsuccessful or fails in completing his/her practical training or viva- voce examination, the matter shall be dealt with in accordance with the relevant 'Rules and Regulations' of the Amity University Haryana.

#### Composition of Jury Panel For Final Evaluation/ Examination Of Practical Training Examiners -

- An Architect Director / Dean / Principal / Head of the Department / Professor of the parent institution.
- An Architect Director / Principal / Head of the Department / Professor of other than the parent institution.
- An Eminent Architect from the profession with at least 15 years of field experience. Further the Practical Training Coordinator will act as facilitator.

#### Examination Scheme:

Periods				Evaluation Scheme							Total Marks	Credits	Duration of Exam (hr)	
L	T	P	S	Internal Assessment				External Assessment						
				CT		TA	A	Total	Theory/ Studio	VIVA/ Practical				Total
				I	II									
0	0	0	0	0	0	0	0	0	0	100	100	100	15	-

**ORDINANCE-EXAMINATION RULES  
BACHELOR OF ARCHITECTURE  
AMITY SCHOOL OF ARCHITECTURE AND PLANNING**

*Following rules are in addition to regulations for conduct of Examinations & Scheme of Evaluation of Amity University Haryana which shall be applicable only for B.Arch Course (Batch 2018-2023 onwards)*

**1. QUALIFYING STANDARDS**

- 1.1. Progressive marks refer to the marks given to a student on a continuous basis during a semester by the concerned subject teacher/teachers.
  - 1.1.1. In the case of subjects which are mainly **studio based** as per the scheme of teaching and examinations, the progressive marks shall be the total of marks given to the various drawings (plates) submitted from time to time by a student on tracing sheets/ butter sheets/drawing sheets or computer printouts. However, if the subject teachers so desire, they shall give some weight age for time problems/tests in these subjects.
  - 1.1.2. In the case of subjects which are mainly **lecture based** as per the scheme of teaching and examinations, the progressive marks shall be based on the average of two tests conducted normally at the end of 8<sup>th</sup> and 12<sup>th</sup> weeks of each semester. Provided that, the teacher may give assignments instead of tests which may include sketching, book reviews, write-ups etc.
  - 1.1.3. In the case of subjects which are mainly **practical based** as per the scheme of teaching and examinations, the progressive marks shall be based on the assignments submitted by the students. A minimum of two assignments per semester shall be given.
  - 1.1.4. In all the above mentioned three cases, viz studio based, lecture based and practical based subjects:
    - The concerned teacher shall give a reasonable opportunity to the student to improve his/ her progressive marks, for example by re-doing the assignments or taking an additional test etc, within the time frame of the given semester with approval of HOD/HOI.
    - The relevant records and submissions of students which have been assessed for progressive marks shall be produced as and when they are sought by the university within 12 months, after 12 months that no records shall be retained/ produced.
- 1.2. If a candidate fails to secure **a minimum of 50% of marks** in progressive marks in any subject, he /she shall not be eligible to take up theory/viva voce/end term examination in that particular subject.
- 1.3. It shall be the responsibility of concerned Head of the Architecture Department/Principal to implement clause “1.2” in the event of an ineligible candidate inadvertently being allowed to appear for the theory/ viva voce /end term examination, the result of the concerned examination shall be considered as null and void.
- 1.4. Such candidates shall correct, improve, redo the concerned works on the advice of subject teacher and re- submit them during subsequent semester of the next year in order to secure the minimum required progressive marks in that subject.
- 1.5. Once a candidate secures ‘minimum’ or ‘more than the minimum’ progressive marks in any subject, the marks shall be made permanent and shall not be changed under any circumstances.
- 1.6. To pass a subject, a candidate shall secure a minimum of 50% marks in Progressive marks and 50% marks in the end term examination (Theory examination/ Practical examination/ viva voce examination/ Total marks) i.e Internal Marks: External Marks: Total marks :: 50:50:50.
- 1.7. Candidates who do not fulfil above cited **clause no. 1.6** shall be deemed to have failed in that subject and have to re-appear for the Theory examination / practical examination or viva voce examination in which he/she has secured less than the minimum prescribed marks.
- 1.8. In B. Arch course a minimum of 5.00 SGPA shall be secured by the student to be eligible for the award of degree.

## **2. THESIS EXAMINATION**

- 2.1. The 'Thesis' of every student in the final semester shall be evaluated on thesis presentation by the student through viva-voce examination by the panel of the jury in accordance with the Regulations issued separately.
- 2.2. The jury shall include two (1:20) external jury members and one internal member (Thesis Coordinator) from the faculty, in addition to the Chairman/HOD/HOI. Out of the four jury members, at least three must be present to complete the proceedings of the jury.
- 2.3. A student who fails in the thesis evaluation shall be allowed to resubmit the modified thesis after a minimum period of two months with due approval by the management, Amity University Haryana.

## **3. PRACTICAL TRAINING**

- 3.1. Each student shall be required to proceed on 'Practical training' for the IX semester after appearing at the VIII semester examination. The HOI/ Chairman ASAP, Amity University Haryana approve the office of the 'Practical training' for the student.
- 3.2. The marks for Practical training shall be awarded to each student in accordance with the Regulations and guidelines issued by the Training Coordinator in consultation with HOI ASAP, Amity University Haryana.

## **4. PROMOTION RULES**

- 4.1. A Student not satisfying the requirement of qualifying standards, at any semester, as per the Clause 1.6, shall be detained from appearing at the semester examination for that particular subject.
- 4.2. Such a student shall have to repeat the particular subject, as aex-student student with the next batch of students.
- 4.3. A student satisfying all the standards as provided in Clause 1 shall be declared to have 'Passed' the semester examination.
- 4.4. A student not satisfying all the criteria of qualifying standards of Clause 1 in conjunction with the provisions of Clause 4.2, but failing in any number of subjects of both the semesters of a class taken together shall be declared to have been 'Promoted With Back-Papers' (PBP) and, shall be governed by Clause 5. A student so declared as PBP shall have to clear the back papers, as and when the examination of the concerned semester is held next.
- 4.5. A student not satisfying all the criteria of qualifying standards of Clause 1.1 in conjunction with the provisions of Clause 4.2, and has invoked the provisions of Clause no. 6, shall be declared as 'Promoted with Grace marks' (PWG), and shall be promoted to the next higher class.
- 4.6. The students who are not covered by provisions of Clause 4.1 to 4.5 shall be declared to have 'Failed'. Such students shall be required to repeat both the semesters of the said class, either as a 'regular student' or as an 'ex-student', in accordance with the Clause 5 and 6.

## **5. PROMOTION UNDER CARRY- OVER SYSTEM**

- 5.1. A candidate covered under Clause 4.4 shall become eligible for provisional promotion to the next higher class of the course and shall get another chance to clear the said 'Back-Papers' in the next examination of the concerned semester under the carry-over system.
- 5.2. On failing again in any of the 'Back-papers' examination of a semester, the provisional admission granted to the concerned student in the higher class shall automatically stand cancelled and he/she shall have to clear the 'Back-papers' as an 'ex-student' or as a 'regular student', in accordance with the Clause 6.
- 5.3. Marks obtained by a student to clear his/her back paper shall replace the original marks, secured earlier by the student only to the extent of the minimum qualifying marks for computation of his/her result.

## **6. EX-STUDENTSHIP**

- 6.1. A student opting to clear his/her examinations as an ex-student shall be required to inform the college, in writing, within 15 days of start of the next academic session.
- 6.2. An ex-student shall be required to appear at the 'Theory' and 'Practical /viva-voce' examination of all the subjects of both the semesters of the concerned class. However, the marks, for the 'Mid Term Examination' of all the subjects in the earlier regular attempt shall be retained as obtained by him/her.
- 6.3. If a student opts to repeat the semester as a regular student, the new marks awarded to him for 'Mid Term Examination' shall replace the old marks obtained by him in the earlier attempt.

## **7. GRACE MARKS**

- 7.1. Grace Marks shall be allotted to the students within the policy directives of the Amity University Haryana.

## **8. MIGRATION**

- 8.1. Migration of students from one Institute to other shall not be allowed unless it falls within the policy directives of the Amity University Haryana.