



### 3. COURSE CONTENTS

#### FIRST YEAR/ SEMESTER ONE

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING-I**

**COURSE CODE: ARC 1001**

**COURSE CREDIT: 10**

#### COURSE INTENT

This coursework provides the students with a comprehensive exploration of fundamentals of design. They are expected to acquire a foundational understanding of design principles supplemented by case studies gaining insight into the design process, culminating in the development of basic design communication skills. By engaging with these components, students will acquire the basic understanding to proficiently navigate diverse facets within the realm of design.

#### COURSE CONTENT

**Module-1: Understanding design** - exercises in letterings, lines and geometrical shapes. Art work exercises like block printing and collage

**Module-2: Elementary Exercises** - Design of posters, book covers, Name Plates, etc

**Module-3: Design study** - Design exercises including doors, windows, furniture and gate; design explorations through models and outdoor exercises

**Module-4: Design practice** - Design of unitary spaces like tea stalls, ice cream kiosk, sulabh sauchalay, bus stands and gateways, understanding requirement of design programming and scope

#### COURSE OUTCOME

**CO1:** Demonstrate the use of freehand drawing and lettering for design communication.

**CO2:** Apply the elements of design in a composition.

**CO3:** Analyze the principles of design in a composition.

**CO4:** Appraise an object/product/space from a design perspective.

**CO5:** Design a space based on the understanding of the design study process.

#### REFERENCES



1. Tenner, E. (2015). The design of everyday things by Donald Norman. Technology and Culture, 56(z), 785-787.
2. Ching, F. D. (2023). Architecture: Form, space, and order. John Wiley & Sons.
3. Neufert, E., & Neufert, P. (2012). Architects' data. John Wiley & Sons.
4. American Institute of Architects, & Hall, D. J. (Eds.). Architectural Graphic Standards. Hanlon, Don. (2009). Compositions in architecture. John Wiley and Sons.
5. Pandya, Yatin (2014). Elements of Space-Making. Grantha Corporation.

**COURSE TITLE: BUILDING MATERIALS & CONSTRUCTION SYSTEMS-I**

**COURSE CODE: ARC 1003**

**COURSE CREDIT: 5**

### **COURSE INTENT**

The coursework intends to familiarize students with a comprehensive overview of building components, materials and construction systems with a specific emphasis on mud, stone, clay and brick covering the characteristics, methods, and applications of each technique, emphasizing sustainability and structural considerations.

### **COURSE CONTENT**

**Module-1: Building components & overview of their structural behavior** - Building components: Walls, Floors and Roofs with their types & uses; various components of a building explored through a typical section. Overview of their structural behavior.

**Module-2: Mud-based Construction Techniques** - Overview of traditional building methods using mud, classification of mud construction along with the construction of Cob wall, rammed earth wall, wattle and daub adobe wall, Stabilized Mud Blocks, and Compressed Stabilized Mud Blocks.

**Module-3: Stone, clay and brick as building material** - Stone - Classification of rocks, quarrying of stones, characteristics of a good stone, dressing, uses, deterioration & preservation of stones; Clay - classification, composition, manufacturing, properties, products, qualities of clay bricks, terracotta tiles,

& clay blocks. Brick: Types, properties, uses and standards, market and ISI, requirements and tests for good bricks.



**Module-4: Types of Masonry (Stone & Brick) and construction details** - Stone Masonry - Types - walls, piers, footings, retaining structures; Brick Masonry - brick bonds, walls, piers, footings; load bearing & non-load bearing walls; construction details; Earthquake resistance; Structural concepts.

**Module-5: Arches and Lintels** - Concept of span and its application in creating openings in masonry walls with lintels and arches. Structural difference in the behavior of lintel and arches. Elementary principles of arch construction, terminology and types of lintels, corbelling and arches with their materials for construction.

## COURSE OUTCOME

**CO1: Classify** the various building components present in a building.

**CO2: Outline** the applications of building construction methods using mud as a material.

**CO3: Identify** the use of stone, clay and brick as building material.

**CO4: Apply** the construction details with stone and brick masonry.

**CO5: Classify** the types of lintels and arches and their construction techniques.

## REFERENCES

1. McKay, W. B., & McKay, J. K. (1975). Building construction. London: Longman.
2. Ambrose, J. (1993). Building structures. John Wiley & Sons.
3. Chudley, R., & Greeno, R. (2005). Construction Technology. Pearson Education.
4. Rangwala, S. C., Rangwala, K. S., & Rangwala, P. S. (1992). Engineering Materials. Charotar Publishing House, New Delhi.

**COURSE TITLE: ARCHITECTURAL GRAPHICS**

**COURSE CODE: ARC 1005**

**COURSE CREDIT: 4**

## COURSE INTENT

The coursework intends to familiarize students with the essential techniques used in architectural drafting, covering from fundamental skills to advanced presentations. The students are expected to communicate through graphic language and geometrical construction, understand the basics of planes and their representation, and understand solid geometry through exercises of increasing complexity.

## COURSE CONTENT

**Module-1: Introduction to drawing** - use of drawing equipment and board, use of pencil, sheet



composition practice

**Module-2: Elements of architectural drawing** - Use of scales and practice of geometrical constructions, points and lines, planes and solids.

**Module-3: Basics of Orthographic Projections** - Introduction to orthographic projections, lines, planes, and solids, sections of solids, development of surfaces, and interpenetration of solids.

**Module-4: Pictorial Projections** - principles of shades and shadows, application of sciography on pictorial views; isometric and perspective views

## COURSE OUTCOME

**CO1: Illustrate** the significance of drafting techniques in architectural drawings.

**CO2: Demonstrate** the use of architectural lettering, annotations, and scales.

**CO3: Develop** surfaces and three-dimensional objects with the help of orthographic projections.

**CO4: Experiment with** solids and understand viewing angles

**CO5: Organize** Texture control and 3D views

## REFERENCES

1. Ching, F. D. (2015). Architectural graphics. John Wiley & Sons.
2. Bhatt, N. D. (1980). Engineering Drawing. Charotar Publishing House, 50th Edition, 2010.
3. Mathur, M. L., & Vaishwanar, R. S. (2002). Engineering Drawing and Graphics. Jain Bros.
4. Pelletier, L. (2000). Architectural Representation and the Perspective Hinge. MIT Press.
5. Gill, R. W. (1973). Rendering with pen and ink. Van Nostrand Reinhold.

**COURSE TITLE: VISUAL ARTS AND MODEL MAKING STUDIO**

**COURSE CODE: ARC 1007**

**COURSE CREDIT: 4**

## COURSE INTENT

The coursework fosters an in-depth exploration of visual arts skill in students through sketching, drawing, rendering, and model-making. Through hands-on exploration and experimentation, students are expected to learn the fundamental principles of aesthetics, informing their creative expression within studio projects through exploration of different materials like paper, clay etc. and proficiency in the composition of three-dimensional forms and space.



**COURSE CONTENT**

**Module-1: Introduction to Visual Art Fundamentals** – exercises in sketching and illustrations, landscape, human figures, furniture, and building elements.

**Module-2: Composition with solids** - simple model making exercises exploring compositions in 2D and 3D using geometric forms

**Module 3: Exploring Visual Expressions-** coloured exercises in compositions of 2D objects exploring balance, rhythm, harmony, contrast, etc

**Module-4: Basics of Model-Making** – models and carpentry works, use of various materials to explore structural concepts

**COURSE OUTCOME**

**CO1: Illustrate** the visual art fundamentals through drawing, composition techniques and spatial relationships.

**CO2: Make use of** rendering techniques with different medium and its application.

**CO3: Analyze** the concepts expressing ideas through two- & three-dimensional visuals.

**CO4: Appraise** model representation possibilities utilize diverse model-building methods.

**CO5: Create** models of built form incorporating different materials and techniques.

**REFERENCES**

1. Norton, Yanes. (2005). Freehand Drawing for Architects and Interior Designers, M.D. and Dominguez, E.R.
2. Trench. (2000). Materials & Techniques in the Decorative Arts: An Illustrated Dictionary. University of Chicago Press.
3. Toy, M. (1996). Color in Architecture, Academy Ed.
4. Dunn, N., (2010). Architectural Model Making, Lawrence King Publishing Ltd., London.
5. Guptill, A. L. (1997). Rendering with pen & ink. New York: Watson-Guption Publications.

**COURSE TITLE: THEORY OF ARCHITECTURE**

**COURSE CODE: ARC 1009**

**COURSE CREDIT: 3**

**COURSE INTENT**



The coursework provides a comprehensive exploration of architectural theory, spanning historical evolution, theoretical frameworks, aesthetic principles, contextual analysis, and critical perspectives. The course fosters a complete comprehension of architectural discourse, refining design skills, nurturing critical thinking, and fostering an appreciation for emerging trends in design. Through practical exercises and theoretical exploration, students develop skills to integrate contemporary architectural principles into their designs, preparing them for diverse professional challenges in the field.

## COURSE CONTENT

**Module-1: Foundations of Architectural Theory** -history of art, archaeological finds of how art was utilised to add quality to living spaces, art movements and art in nature, golden mean, etc

**Module-2: Design thinking** - designed objects from everyday life, building interiors; comparisons of designed and badly designed examples, definition of 2D and 3D drawing, design thinking explained

**Module-3: Aesthetics and Design Principles** - Studies regarding elements of design and principles of design; colour and shape, shape and form, form and order; geometrical analysis of design.

**Module-4: Contextual Analysis and Design** - Conventional and parametric thinking; examples of classical, renaissance and contemporary forms, understanding of expressions of form through texts and visuals.

## COURSE OUTCOME

**CO1: Demonstrate** a comprehensive understanding of foundational concepts and historical developments in architectural theory.

**CO2: Relate** various theoretical frameworks to analyze architectural design.

**CO3: Outline** the application of aesthetics and design principles in architectural works.

**CO4: Develop** architectural forms within their contextual settings.

**CO5: Organize** discussions on aesthetic principles and theoretical perspectives

## REFERENCES

1. Baker, G. (2012). Design strategies in architecture: An approach to the analysis of form. Routledge.
2. Tschumi, B. (1996). Architecture and disjunction. MIT Press
3. Ching, F. D. (2023). Architecture: Form, space, and order. John Wiley & Sons.
4. Kruff, H. W. (1994). A history of architectural theory from Vitruvius to the present. Princeton Architectural Press.



5. Leach, N. (2017). Rethinking architecture: A reader in cultural theory. Routledge.

**COURSE TITLE: ENVIRONMENTAL SCIENCE**

**COURSE CODE: ARC 1011**

**COURSE CREDIT: 3**

### **COURSE INTENT**

The coursework intends to empower students with a deep comprehension of fundamental principles and a broad overview of environmental aspects in a built environment. It is designed to assist students in recognizing environmental issues and fostering awareness for environmental preservation towards establishing a safe and healthy environment for future generations.

### **COURSE CONTENT**

**Module-1: Introduction to Environmental Science, Ecosystems and Natural Resources -**

Multidisciplinary nature of environmental science; components of environment. Scope and importance; Concept of sustainability and sustainable development. Overview of Brundtland Commission. Ecosystem, Structure and function of ecosystem; Energy flow in an ecosystem, Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources with case studies.

**Module-2: Biodiversity and Conservation -** Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

**Module-3: Environmental Pollution and Solid Waste Management -** Environmental pollution: types, causes, effects and controls; Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Solid waste management: Control measures of urban and industrial waste. Environment Laws.

**Module-4: Current Environmental Issues -** Contemporary and emerging environmental issues of local, regional and global significance, impacts on environment, human health and welfares. Carbon footprint and Ecological Footprint. Disaster and management: floods, earthquakes, cyclones and landslides.



Environmental movements; Environmental ethics.

**Module-5: Architecture and the Environment** - Environmental Architecture Theory- Sustainable building design principles: Hannover Principles – Low Impact Materials, Energy Efficiency, Reuse and Recycling, Design Impact Measures, Biomimicry, Sustainable Design Standards- Sustainable building materials and technology.

### COURSE OUTCOME

- CO1: Define** the fundamentals of environmental science, ecosystems and natural resources.
- CO2: Explain** the importance of biodiversity and its conservation.
- CO3: Classify** the characteristics of environmental pollution with waste management.
- CO4: Identify** the contemporary and emerging environmental issues of local, regional, and global level.
- CO5: Make use of** the modern architectural theories towards ensuring environment compatibility in design.

### REFERENCES

1. Dash, M. C. (1993). Fundamentals of Ecology Tata McGraw Hill. New Delhi-373pp.
2. Rao, C.S., 2007. Environmental pollution control engineering. New Age International.
3. Goel, S. ed., 2017. Advances in solid and hazardous waste management. New York: Springer
4. Masters, G.M., 1998. Introduction to environmental engineering and science.
5. Williams, D. E. (2008). Sustainable Design: Ecology, Architecture, and Planning. John Wiley & Sons.



## FIRST YEAR/ SEMESTER TWO

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING-II**

**COURSE CODE: ARC 1002**

**COURSE CREDIT: 10**

### COURSE INTENT

This coursework aims to foster creativity and critical thinking in design, emphasizing small-scale buildings. It cultivates students' ability to respond to context while understanding architectural principles. Through imaginative ideation and consideration of challenges, students are expected to propose design solutions that meet user needs and enhance project success. Probable projects in this typology could include residences, restaurants, clinics, nursing homes etc. **(Site extent up to 500 sq.m).**

### COURSE CONTENT

**Module-1: Theme & Focus of Design** – User-activity analysis; context; Functional & aesthetic requirements for development of design program; Conceptualization and design process with focus on load bearing structures using brick, stone; timber, etc.

**Module-2: Determinants of Design** – Behavioral Science; Functionality; Building Materials; Theory of Design; Environmental aspects, Tectonic decisions - Structures, Services; Site Planning; Building Control Regulations; Inclusive Design.

**Module-3: Form Development** – Exploration & analysis of developing design iterations on site; Formulation & massing of multiple volumes in response to functional spaces; Interrelationship between multiple spaces & masses; Elements; Materials; Treatments; Stability; Development of forms through sketches, models, case studies etc.

**Module-4: Design Analysis** – Understanding design philosophy & process; Learning from design quality; Literature/book reviews; Architectural critiques and integrating the learnings towards developing design solution.

**Module-5: Design Communication** – Design communication by incorporating suitable materials and structure, generating creative design responses, communicating the same through a variety of mediums like presentations, architectural representations, and model-making.



- CO 1: Illustrate** and infer required learnings from the relevant literature and studies.
- CO 2: Outline** the client's requirements in design program through client brief with respect to the context and statutory requirements.
- CO 3: Analyze** the form and structure through explorations in geometry and understanding of site conditions and site analysis and applicable rules, norms and regulations.
- CO 4: Appraise** design solutions through design development considering the structure as load bearing based on form, function, space planning, user perception.
- CO 5: Compile** the final design proposal in the form of portfolio and models.

## REFERENCES

1. Unwin, S. (2013). *Analysing Architecture*. Routledge.
2. Neufert, E. and Neufert, P. (2012). *Architects' data*. John Wiley & Sons.
3. De Chiara, J. (2001). *Time-saver standards for building types*. McGraw-Hill Professional Publishing.
4. *National Building Code of India (2016)*. Bureau of Indian Standards.
5. Lynch, K., & Hack, G. (1984). *Site planning*. MIT press.
6. Gänshirt, C. (2007). *Tools for ideas: Introduction to architectural design*. De Gruyter.

**COURSE TITLE: BUILDING MATERIALS AND CONSTRUCTION SYSTEMS-II**  
**COURSE CODE: ARC 1004**  
**COURSE CREDIT: 5**

## COURSE INTENT

The course work intends to develop a comprehensive understanding of building components, architectural details and methods of construction of Timber and Bamboo as a building material. It also delves into the understanding of the material properties and their application in building construction.

## COURSE CONTENT

**Module-1: Introduction to Timber as building material** - The study of timber includes its classification, processing, and use in construction. This involves understanding timber's properties, seasoning methods, defects, and preservation techniques. The qualities and building applications of industrial timber products such as block board, plywood, particle board, fiberboard, and laminates are explored.

**Module-2: Timber Openings and Staircase details** - Types- Timber Doors, Windows & Ventilators



components, fixing, joinery details and Structural concepts. Timber stairs components, Types, application, fixing, joinery details and Structural concepts. Architectural detailing includes methods for drawing sections, views, plans, and elevations.

**Module-3: Timber flooring and construction details**-Timber floor components, Types, application, fixing, joinery details and Structural concepts. Architectural detailing includes methods for drawing sections, views, plans, and elevations.

**Module-4: Timber Roof and construction details** -Timber Roof components, Types, application, fixing, joinery details and Structural concepts. Architectural detailing includes methods for drawing sections, views, plans, and elevations. Bamboo as an alternative building material and its application in architectural design is also discussed in the course.

**Module-5: Bamboo as a construction material** – Overview of application of bamboo in construction, emphasizing its use in diverse components such as flooring, walls, and structural elements. Its construction techniques including weaving, lamination, and joinery, showcasing Bamboo's sustainability and adaptability in contemporary building practices.

## COURSE OUTCOME

**CO1: Classify** the various timber components present in a building.

**CO2: Demonstrate** the applications of building construction methods using timber as an opening.

**CO3: Organize** the knowledge about the use of timber in stairs and flooring.

**CO4: Analyze** the construction details of timber roof.

**CO5: Examine** the application of Bamboo in various components and their construction techniques.

## REFERENCES

1. McKay, W. B., & McKay, J. K. (1975). Building construction. London: Longman.
2. Ambrose, J. (1993). Building structures. John Wiley & Sons.
3. Chudley, R., & Greeno, R. (2005). Construction Technology. Pearson Education.
4. Rangwala, S. C., Rangwala, K. S., & Rangwala, P. S. (1992). Engineering Materials. Charotar Publishing House, New Delhi.



**COURSE TITLE: DIGITAL APPLICATIONS-I**

**COURSE CODE: ARC 1006**

**COURSE CREDIT: 4**

**COURSE INTENT**

The coursework intends to empower students with essential skills in 2D drafting, enhancing skills in digital design, and architectural drafting for effective communication of architectural concepts in the digital age.

**COURSE CONTENT**

**Module-1: Auto CAD Drafting Techniques** - Introduces students to essential and advanced concepts in AutoCAD. Starting with the exploration of the digital design landscape, it covers 2D drafting techniques and advances to architectural drawing standards.

**Module-2: Project Work** - The course emphasizes collaborative project work and portfolio development, equipping students with a robust skill set for architectural design, drafting, and effective visual communication.

**Module-3: Model Development** - Preparation of correct formatting and modes of presentations; acquiring skills in understanding layers, drawing spaces, and plotting modes

**COURSE OUTCOME**

**CO1: Outline** the significance of computer-aided drafting in presenting professional drawings.

**CO2: Make use of** various command prompts and formats in CAD.

**CO3: Develop** various architectural drawings and details.

**CO4: Utilize** rendering and annotations.

**CO5: Develop** different types of presentations.

**REFERENCES**

1. Krygiel, E., & Nies, B. (2013). "Architectural Drafting and Design." Cengage Learning.
2. Omura, G. (2017). "Mastering AutoCAD 2018 and AutoCAD LT 2018." Sybex.
3. Madsen, D. A., & Shumaker, T. M. (2017). "AutoCAD and Its Applications Basics 2018." Goodheart-Willcox Pub.
4. Evening, M. (2017). "Adobe Photoshop CC Classroom in a Book." Adobe hisyPress.
5. Andrews, P. (2016). "Adobe Photoshop CC for Photographers 2018." Focal Press.
6. Lynch, J., & Farrell, C. (2017). "Photoshop for Architects." Taylor & Francis



**COURSE TITLE: SITE PLANNING AND LANDSCAPE DESIGN STUDIO**

**COURSE CODE: ARC 1008**

**COURSE CREDIT: 4**

**COURSE INTENT**

The course intends to develop an understanding of existing landscape features, related terminologies, and concepts. This course develops an ability to analyze the environmental, ecological, and geomorphological characteristics that generate the decisions in the planning of any site. The course shall have a direct application in the same semester's design studio and subsequent semesters for site planning and landscape design.

**COURSE CONTENT**

**Module-1: Introduction to Landscape Architecture** - The significance of nature to human relation and scope of landscape architecture; integration with sustainable development and architectural design; role of a landscape Architect; natural and man-made elements of landscape.

**Module-2: Landscape elements and principles** - scales & conception of landscapes; Hardscape & Softscapes: -pathways & plazas, roadways & parking lots, garden furniture, fences, rocks, masonry, and pergolas; retaining walls, pavement and surfacing, fence, and screening; site furnishings. Softscapes: water features, turf, and plantations; Design requirements: visual appeal, practicality, microclimate, ecology, and symbolic elements.

**Module-3: Introduction to Site Planning Principles** - Site planning process and its significance; identification of the site's components and surrounds; topography, vegetation, soil, hydrology, climate etc. and their effects on the site; Site sections, grading, survey maps, slope analysis: design issues in site planning and siting of buildings. Integrating the built and open spaces; circulation of vehicles and pedestrians. The role of landscape components in modifying microclimate with respect to temperature, humidity, precipitation, air corridors, heat islands, wind speed etc.

**Module-4: Landscape Services & Sustainability** - Introduction to landscape services and sustainability; methods for managing soil, irrigation, surface water drainage, and outdoor lighting; An overview of sustainable practices in landscape architecture; Bioswales, xeriscaping, moist ground, effective irrigation with greywater, and product recycling; green roofs & walls, rain water harvesting etc.

**Module-5: Assessing the Best Practices-** Exploration of best Landscape projects with sustainable



practices; assessment of the works by renowned landscape architects.

## COURSE OUTCOME

**CO1: Outline** the various concepts of landscape design.

**CO2: Illustrate** the landscape components.

**CO3: Identify** the various site planning principles.

**CO4: Analyze** landscape services and sustainable practices.

**CO5: Compare** the works of renowned landscape architects.

## REFERENCES

1. Simonds, J.O. (1998). Landscape Architecture: A Manual of Site Planning and DESIGN. McGraw Hill Professional.
2. Lynch, K., & Hack, G. (1984). Site Planning, third ed. In MIT Press.
3. Root, J.B. (1985). Fundamentals of Landscape and Site Planning. AVI Pub. Co.
4. Sorvig, K., & Thompson, J. W. (2018). Sustainable Landscape Construction. 1–506.
5. Harris, C.W., & Dines, N. (1988). Time-saver standards for landscape architecture: design and construction data.

**COURSE TITLE: SOCIETY, CULTURE AND BUILT ENVIRONMENT**

**COURSE CODE: ARC 1010**

**COURSE CREDIT: 3**

## COURSE INTENT

To develop the ability to understand the fundamentals of society and culture in built environment with reference to architectural history, the basic sociological concepts and cultural adaptation and transformation of civilization and learn their applications in space planning and architectural design.

## COURSE CONTENT

**Module-1: Society and culture and its implications in human settlement-** Introduction to various settlement studies to cultivate a comprehensive understanding of the intricate relationship between society, culture, and the built environment, particularly within the context of architectural history.

**Module-2: Sociology and Architecture** – Fundamentals of sociology, exploring basic sociological concepts and their practical applications in space planning and architectural design.



**Module-3: Cosmological models and Architectural form** – Understanding the cultural influences on social identity, societal fundamentals, historical forms of social organization, and diverse definitions of culture and civilizations within the context of architectural history.

**Module-4: Society and Civilization** - Social and cultural aspects of building practices, Case studies of various examples on social and cultural issues relating to architectural history in India and world. Asian traditions in architecture, Concept of vernacular architecture.

**Module-5: Cultural adaptation and transformation** – Transformations and changes in forms of historical architecture, Localization and globalization – cases and examples, Loss of architectural identity and role of culture, Definition of Renewal, transformation, redevelopment, rejuvenation in architectural context and basic concepts.

## COURSE OUTCOME

**CO1: Define** society and culture and its implications in human settlement studies.

**CO2: Outline** the integral relationship between sociology and architecture.

**CO3: Demonstrate** the correlation between cosmological models and architectural form.

**CO4: Identify** the various social and cultural issues relating to architectural history.

**CO5: Apply** the transformations through time and across cultures.

## REFERENCES

1. Manuel, D. L. (2019). A Thousand Years of Nonlinear History. New York: Zone Books.
2. Kostof, S. (2010). A History of Architecture: Settings and Rituals. New York: Oxford University Press.
3. Mcadams, M. A., Cantu, J. T., & Vassoler-froelich, I. (2012). The Geography, Politics, and Architecture of Cities: Studies in the Creation and Complexification of Culture. New York, Lewiston: Edwin Mellen Press.
4. Rapoport, A. (1969). House Form & Culture. Prentice Hall.
5. Roth, L. M., & Clark, A. C. R. (2018). Understanding Architecture: Its Elements, History, and Meaning. Routledge.
6. Vellinga, M., & Asquith, L. (2005). Vernacular Architecture in the Twenty-First Century. Taylor & Francis.



**COURSE TITLE: CLIMATE RESPONSIVE DESIGN**

**COURSE CODE: ARC 1012**

**COURSE CREDIT: 3**

**COURSE INTENT**

The course is intended to introduce global and local climates, classify tropical climates, study thermal comfort, understand sun paths and shading devices, and learn diverse passive design strategies for varied climatic zones.

**COURSE CONTENT**

**Module-1: Introduction to Climate** - Introduction to climate, parameters of climate, and their impact on global and local context. Interpretation of climatic data -temperature, wind, precipitation.

**Module-2: Classification of Climates** - Classification of Climates, Koppen's Climate classification system, Understanding climate zones & their impact on Warm & humid climate, Hot & dry climate, Composite climate & Cold climate. Exploring building materials for different climatic zones

**Module-3: Human Comfort**- definitions and concepts, Thermal Comfort Factors, Relation of climatic elements to comfort, Bioclimatic design. Understanding the psychometric chart, Understanding the sun path & shading devices, orientation of building, openings- sizes, position.

**Module-4: Passive design strategies** - Cooling & Heating: Daylighting & envelope design; Study of different passive cooling & heating strategies in buildings; Ventilation, courtyards, wind towers, stack effect & chimney.

**Module-5: - Climate responsive design** - Climate responsive design in different climatic zones through case examples.

**COURSE OUTCOME**

**CO1: Classify** the different parameters of climate.

**CO2: Outline** climate as per Koppen's climate classification.

**CO3: Illustrate** thermal comfort and design shading devices.

**CO4: Identify** passive design strategies.

**CO5: Compare** case examples of climate responsive design for climatic zones.



**REFERENCES**

1. Szokolay, S. V. (2008). Introduction to Architectural Science: The Basis of Sustainable Design (2nd ed.). Architectural Press.
2. Koenig Berger, O. H. (1974). Manual of Tropical Housing and Building: Climate Design. Longman.
3. Davies, M. G. (2004). Building Heat Transfer. John Wiley & Sons, Ltd.
4. Kukreja, C. P. (1982). Tropical Architecture. New Delhi: McGraw-Hill.
5. Sudha, M. S., Bansal, N. K., Kumar, A., & Bansal, P. K. (1986). Solar Passive Buildings, Science and Design. London: Pergamon Press.



## SECOND YEAR/ SEMESTER THREE

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING-III**

**COURSE CODE: ARC 2001**

**COURSE CREDIT: 10**

### COURSE INTENT

The course aims to familiarize students with multi-functional building typologies, planning principles, and standards, considering site context and scale. Students are expected to incorporate the various aspects of existing site conditions during design process with the application of loadbearing in construction, building services and landscape while being compliant with building regulations for proposing the design solution.

Probable projects in this typology could include community libraries, art galleries, neighbourhood community centre, bank, kindergarten, primary health care centre etc. (**Site extent up to 800 sq.m-1000 sq.m**).

### COURSE CONTENT

**Module-1: Theme & Focus of Design** – Theme & Focus of Design: Study & analysis of various user types & their activities; Development of design program; Conceptualization and design process with focus on load bearing structures.

**Module-2: Basic Components** – Behavioural Science; Functionality; Building Materials; Theory of Design; Environmental aspects, climatic aspects, Tectonic decisions - Structures, Services; Site Planning; Building Control Regulations; Inclusive Design.

**Module-3: Exploration of Site features and context** – Exploration & analysis of developing design iterations on sites; Understanding design philosophy & process; Learning from design quality; Literature/book reviews; Architectural critiques.

**Module-4: Design Detail** – Importance, exploring & understanding the essence; Detailing process; User analysis; Elements; Functionality & aesthetics; Materials. Design process to be represented through conceptual development (sketches, physical & digital models).

**Module-5: Design Communication** – Design communication by incorporating suitable materials and structure, generating creative design responses, communicating the same through a variety of mediums



like presentations, architectural representations, and model-making.

## COURSE OUTCOME

**CO1: Illustrate** and infer required learnings from the relevant case, literature studies and the use of loadbearing as a construction technique through comparative case studies.

**CO2: Outline** the client's requirements in design program through client brief with respect to the context and statutory requirements.

**CO3: Analyze** the form and structure through explorations in geometry and understanding of site conditions and site analysis and applicable rules, norms and regulations.

**CO4: Appraise** design solutions based on form, function, space planning, user perception.

**CO5: Compile** detailed design through effective graphical, physical models and verbal communication and representation skills.

## REFERENCES

1. Harris, C. W., & Dines, N. T. (1998). Time-saver standards for landscape architecture. McGraw-Hill.
2. LaGro, J. A. (2013). Site analysis: Informing context-sensitive and sustainable site planning and design. John Wiley & Sons.
3. Reid, G. (2012). Landscape graphics: plan, section, and perspective drawing of landscape spaces. Watson-Guption.
4. Strom, S., Nathan, K., & Woland, J. (2013). Site engineering for landscape architects. John Wiley & Sons.
5. Woland, J. (2013). Site Engineering Workbook. John Wiley & Sons.

**COURSE TITLE: BUILDING MATERIALS AND CONSTRUCTION SYSTEMS-III**

**COURSE CODE: ARC 2003**

**COURSE CREDIT: 5**

## COURSE INTENT

The coursework intends to familiarize students with a comprehensive overview of Reinforced Cement Concrete (RCC) and precast building materials and construction systems. The students will acquire knowledge of various RCC components, BIS Codes, and their applications in Architectural Design.

## COURSE CONTENT



**Module 1: Fundamentals of RCC and Precast** - Concept; Composition; Importance of RCC; Types of Concrete; concept of Precast, Properties of Concrete & Steel; Classification of Cement, Mortar & Concrete; Related BIS Codes.

**Module 2: RCC Footings and RCC Columns** - Types, advantages, properties, construction details, design considerations, applications, Related BIS Code provisions.

**Module 3: RCC Slabs and RCC Beams** - Types, advantages, properties, construction details, design considerations, applications, Related BIS Code provisions.

**Module 4: RCC Staircase, Ramps and Shear Walls** - Types, advantages, properties, construction details, planning and design considerations, applications, Related BIS Code provisions.

**Module 5: Miscellaneous Structures** - Retaining wall, Cantilever structures with their properties, precast elements uses and limitations; related BIS Code provisions. UG & OHT Tanks.

## COURSE OUTCOME

**CO1: Demonstrate** the understanding of the basics of RCC as construction material, its types, properties.

**CO2: Illustrate** the application of RCC and precast as a building material.

**CO3: Identify** the advantages of using RCC and precast as construction material compared to other materials.

**CO4: Examine** RCC and precast as an efficient building material in architectural design.

**CO5: Analyse** the detailing of RCC and practical application.

## REFERENCES

1. Prabhu, B. T. (1987). Building Drawing and Detailing. SPADES, Calicut.
2. Deplazes, A. (2018). Constructing architecture: materials, processes, structures. Birkhauser, Basel, Switzerland.
3. Ching Francis, D. K. (2018). Building Construction Illustrated. John Wiley and Sons, New Delhi.
4. Foster, J. S. (1995). Mitchell's Structure & Fabric Part: 2. Routledge.



**COURSE TITLE: DIGITAL APPLICATIONS-II**

**COURSE CODE: ARC 2005**

**COURSE CREDIT: 4**

### **COURSE INTENT**

The coursework is intended to familiarize students with the essential techniques used in 3D Visualization. The students are expected to communicate through the graphic language of 3D Modelling and animation.

### **COURSE CONTENT**

**Module 1: Basics of 3D** - modelling Transitions to 3D modeling principles

**Module 2: Sketchup Modelling** - Introduces students to essential and advanced concepts in SketchUp. Transitions to 3D modeling principles. Students are expected to create intricate architectural elements and gain proficiency in 3D modeling software.

**Module 3: Visualisation Techniques** - Twin Motion for virtual walkthroughs; application of game engines like Unreal (architectural visualization); integration of Virtual Reality (VR) for immersive architectural experiences. Hands-on exercises to create compelling visualizations and virtual environments.

### **COURSE OUTCOME**

**CO1: Demonstrate** the significance of 3D Modelling in architectural drawings.

**CO2: Illustrate** different commands and features of Sketchup

**CO3: Develop** skills of drawing 3D architectural blocks and features.

**CO4: Develop** 3D drawings using various angles and lighting conditions

**CO5: Organize** different types of presentation drawings.



**COURSE TITLE: GEODETIC SURVEY AND LEVELLING**

**COURSE CODE: ARC 2007**

**COURSE CREDIT: 2**

**COURSE INTENT**

The coursework intends to empower students with a comprehension of fundamental principles of surveying and levelling. The students acquire knowledge with the necessary tools and techniques to effectively integrate surveying and levelling into their architectural practice.

**COURSE CONTENT**

**Module 1: Introduction to Surveying** - Introduction to chain survey; principles; classification; instruments; ranging; reciprocal ranging; chaining on sloping ground; errors in chaining; tape corrections; obstacles to chaining and ranging; problems in chaining; cross staff survey; chain triangulation.

**Module 2: Levelling & Plane Table survey** - Levelling, methods of levelling; booking and reduction of levels; longitudinal levelling; cross sectioning; errors in levelling; problems in levelling. Plane table survey; advantages and disadvantages; types of plane table survey; radiation; intersection; traversing and resection; errors in plane table survey. Contouring; definitions; properties of contours; different methods of contouring; uses of contours.

**Module 3: Theodolite survey** - Theodolite survey; measurement of horizontal and vertical angles; problems tackled like centre line of building; setting out angles, etc.

**Module 4: Total station & Tacheometry** - Modern surveying equipment's- Total Station; Methods of control establishment; Traversing; Tacheometric Surveying.

**Module 5: GPS survey**- Introduction of GPS Surveying; PS data collection methods; applications for mapping; Lidar and UAV surveys; Importance of geomatics engineering techniques to Architecture and Planning.

**COURSE OUTCOME**

**CO1: Illustrate** the different principles of surveying and the various instruments used for surveying and leveling.

**CO2: Explain** the various methods of leveling and contouring to solve simple design problems.

**CO3: Identify** the characteristics and uses of theodolite survey.

**CO4: Make use of** the characteristics of modern surveying equipment.



**CO5: Utilise** the principles of GPS surveying, Lidar and UAV surveys, and geomatics engineering techniques.

## REFERENCES

1. Kanetkar, T. P. & Kulkarni, S. V. (2014). Surveying and Levelling. Vol.I. Vidyarthi Griha Prakashan, Pune
2. Rangwala, (2014) Surveying and Levelling 7th edition. Charotar Publishing House
3. Punmia, B. C. (2016). Surveying. Laxmi Publications Private Limited, Bangalore.
4. Arora, K. R. (2010). Surveying Vol.I. Standard Book House, New Delhi
5. Fahlstrom, P. G., Gleason, T. J., & Sadraey, M. H. (2022). Introduction to UAV systems. John Wiley & Sons.

**COURSE TITLE: STRUCTURES-I**

**COURSE CODE: ARC 2009**

**COURSE CREDIT: 3**

## COURSE INTENT

The coursework intends to empower students to deeply comprehend the fundamentals of force systems, moments, and support reactions as they apply to architectural projects. The students will acquire knowledge of geometric features of plane sections, various structural systems, and their practical applications in building and design.

## COURSE CONTENT

**Module-1: Introduction to Force Systems and Engineering Mechanics** - Force and its characteristics, Types of force systems, Introduction to SI units, Principle of superposition, transmissibility of forces, Composition by resolution method, Simple numerical problems on resultant of force systems.

**Module-2: Equilibrium of force system** - Equilibrium of concurrent forces, Lami's theorem, Moment of force, Varignon's theorem non-concurrent force systems, Equivalent force - Couple system; Equilibrium of force systems, conditions of equilibrium. Simple numerical problems on the equilibrium of the force system.

**Module-3: Beams and support reactions** - Types of loads, types of support, and different beam types. Simple numerical problems on support reactions.

**Module-4: Centroid and Moment of Inertia** - Introduction to the concept of centroid, the axis of symmetry,



and the centroid of plane geometrical figures. Introduction to the moment of inertia, Radius of gyration, Parallel axis theorem, Perpendicular axis theorem, and Moment of Inertia of plane figures. **Module-5: Structural Systems and Building Loads** - Introduction to various structural forms, structural systems, structural loads, and their application in architectural design.

### COURSE OUTCOME

**CO1: Define** the various force systems and describe the fundamentals of mechanics.

**CO2: Explain** the concept of the resultant and equilibrant of forces.

**CO3: Outline** the different types of loads and calculate the support reactions.

**CO4: Identify** the concept of centroid and moment of inertia and their applications in architectural projects.

**CO5: Develop** the various structural forms, systems, and loads and their applications in architectural design.

### REFERENCES

1. Bhavikatti, S. S., & Rajashekarappa, K. G. (1994). Engineering Mechanics. New Age International Private Ltd
2. Bhavikatti, S. S. (2011). Basic Civil Engineering and Engineering Mechanics. New Age International Private Ltd.
3. Meriam, J. L., Kraige, L. G., & Bolton, J. N. (2017). Engineering Mechanics: Statics. Wiley.
4. Ramamrutham, S., & Narayanan, R. (2017). Engineering Mechanics. New Delhi Dhanpat Rai Publications.
5. Prakash, S. MN., & Mogaveer, G. B. (2022). Elements of civil engineering and Engineering Mechanics. New Delhi PHI Learning Pvt Ltd.

**COURSE TITLE: HISTORY OF ARCHITECTURE-I**

**COURSE CODE: ARC 2011**

**COURSE CREDIT: 3**

### COURSE INTENT

The coursework fosters an in-depth exploration of different styles of Indian Temple Architecture over time. The students will acquire knowledge of evolution, general settlement patterns, geographic and climatic influence, socio-political background, construction technology, material influence, and design principles of the cities and their built forms.



**COURSE CONTENT**

**Module 1: Buddhist school (322-185 BC) -** Ashoka- Rock Cut Chambers; Architecture (Core)- Chaityas and Viharas, Sanchi Stupa, Ashoka Pillar and Torana.

**Module 2: Rock-Cut Architecture (2<sup>nd</sup> century-6<sup>th</sup> century AD)-** Hinayana Sect- Architecture- Bhaja Caves, Ajanta (Cave 9 & 10); Mahayana Sect Architecture: Ajanta and Ellora Caves; & Evolution of temples in Gupta period.

**Module 3: Evolution of Temple Architecture (till 8<sup>th</sup> century AD)-** Pallava Dynasty-Mandapas and Rathas at Mahabalipuram, Shore Temple; Components of Dravida Vimana, Kailasnatha Temple at Kanchipuram & Nataraja temple at Chidambaram.

**Module 4: Dravidian Temples (9-13<sup>th</sup> century AD) -** Introduction, Dravidian Temples: Built spaces (Temples), Political background / Socio-Cultural Influences, Context, and site planning, Materials, Techniques of construction: Dynasties in the South, Architectural Examples for each dynasty: Pandyan architecture - Madurai Meenakshi temple, Chola architecture – Temple at Thanjavur & Temple at Gangai Konda Cholapuram Kumbakonam, Chalukyan Architecture: Badami caves Ladkhan Temple, Durga Temple, and Virupaksha Temple.

**Module 5 : Classification of Indian Temples (Till 13<sup>th</sup> century AD) -** Typologies concerning pradakshina patha; Three Subtypes of Nagara Temple depending on the shape of shikhara, Rathas; Understanding common features of Nagara Style of Temple Architecture: Three sub schools of Nagara Style Temples: Odisha Temples: Lingaraj Temple, Sun temple at Konark; Khajuraho/ Chandel

School of Temple Architecture: Kandariya Mahadeva Temple; Solanki School of Temple Architecture: Sun Temple Modhera; Jain Temples: Dilwara Temple.

**COURSE OUTCOME**

**CO1: List** the different Architectural components of Indian temple styles and their significant features.

**CO2: Illustrate** the built environment, construction techniques, and materials used in temples.

**CO3: Explain** the physical characteristics in connection with geographical and geological aspects.

**CO4: Identify** the importance of typological evolution in Indian temple architecture, influenced by socio-political, cultural factors, and regional influences.

**CO5: Organise** the significance of each architectural style in the overall design and their historical evolution.



## REFERENCES

1. Brown, P. (1959). Indian Architecture (Buddhist and Hindu) (Fourth Edi). D.B. Taraporevala Sons & Co. Pvt. Ltd.
2. Fergusson, J. (2022). History of Indian and Eastern Architecture.
3. Grover, S. (1980). The Architecture of India: Buddhist and Hindu. Vikas Publishing House Pvt. Ltd.
4. Majumdar, R. C., Raychaudhuri, H. C., & Datta, K. (1974). An Advanced History of India (Third). Macmillan India.
5. Sharma, R. S. (2009). India's Ancient Past. Oxford University Press

**COURSE TITLE: BUILDING SERVICES-I**

**COURSE CODE: ARC 2013**

**COURSE CREDIT: 3**

## COURSE INTENT

The coursework endeavours to deliver the students with an extensive comprehension of the fundamental principles of water supply and drainage systems. The students will learn about sanitation layout necessities for various scales, such as buildings and neighbourhood's, along with rainwater harvesting calculations and solid waste disposal for effective implementation.

## COURSE CONTENT

**Module 1: Introduction to Water Supply** - Significance and necessity of Building Services; Historical review of water supply, plumbing, and sewerage systems on a global and Indian scale; Study on water sources, purity standards, water impurities, and their treatment; Exploration of wastewater recycling and sewage treatment plant processes.

**Module 2: Water Supply & Distribution Systems** - Water distribution system at city and neighbourhood from the treatment plant to individual unit; Types of water distribution networks, pipes, joints, fixtures and valves, water meters, etc.; Water storage tanks, their capacity and location; Principles of water supply in buildings (low rise, multi-storeyed) and related terminologies; Cold and hot water supply network and connections; Calculation of water consumption, design and management of water supply for buildings based on Indian standards.

**Module 3: Sanitation** - Sanitation systems like dry, wet carriage systems, etc, at various urban scales; Types of sewers and location of manholes etc. and related terminologies; Layout and calculations for



design of sanitary networks at neighbourhood scale; Design calculations of septic tank, soak-pits, cesspools, aqua-privy, leeching pits etc.; Types of traps, chambers and sanitary fixtures; Types of pipes and joints; Design principles of sanitary layout; Building sanitation systems.

**Module 4: Rainwater Harvesting** - Concepts of rainwater harvesting; Surface area division for rainwater disposal. Details of collection point. Conveyance network for rainwater (catch basin, gully traps, etc); Calculation for rainwater quantity, gradients, section of drains etc.

**Module 5: Solid Waste Disposal & Management** - Types of solid waste; Quantity of waste generated, collection and segregation of municipal solid waste. Recycling techniques for solid waste.

### COURSE OUTCOME

**CO1: List** different freshwater sources, collection, and treatment methods.

**CO2: Outline** different principles of water supply and distribution systems.

**CO3: Classify** different sanitation systems.

**CO4: Identify** appropriate rainwater harvesting systems.

**CO5: Choose** different types of solid waste disposal & management.

### REFERENCES

1. Bureau of Indian Standards. (2016). National Building Code of India. New Delhi
2. Shah, C. S. (1998). Architectural handbook series Water Supply and Sanitation. Galgotia Publishing Company.
3. Rangwala, S. C. (1998). Fundamentals of Water Supply and Sanitary Engineering. Charotar Publishing House, New Delhi
4. Ashok L. Chhatre; translated by Ramesh G. Bhambhani. (2015) Building service and equipment. Priyadarshini Institute of Architecture & Design studies
5. Fred Hall & Roger Greeno. (2011). Building Services Handbook. (Chapter 2, 3, 8 & 9) Elsevier.



## SECOND YEAR/ SEMESTER FOUR

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING-IV**

**COURSE CODE: ARC 2002**

**COURSE CREDIT: 10**

### COURSE INTENT

The coursework introduces climate responsive design principles in hospitality projects across climates, emphasizing spatial planning, interior/exterior design, and environmental factors for immersive user experiences. Students are expected to conduct a thorough research on passive design strategies towards developing innovative, comfortable, and luxurious hospitality spaces prioritizing sustainable and climate sensitive approaches.

Probable projects in this typology could include resorts, home stays, restaurants, cafeteria, motels, club houses, leisure spaces etc. **(Site extent up to 1- 2 acres).**

### COURSE CONTENT

**Module-1: Theme & Focus of Design** – Theme & Focus of Design: Study, analysis & implementation of climate responsive design fundamentals and approaches that leverage natural environmental conditions to regulate indoor temperature, lighting, and ventilation, reducing reliance on mechanical systems.

**Module-2: Basic Components** – Behavioural Science; Functionality; Building Materials; Theory of Design; Environmental aspects, climatic aspects, Tectonic decisions - Structures, Services; Site Planning; Building Control Regulations; Inclusive Design.

**Module-3: Gateways & Thresholds** – Exploration of computational parametric schemes and performance simulations for design solutions towards optimizing building forms and configurations for specific climatic conditions.

**Module-4: Design Analysis** – Exploration & analysis of iconic Eco-sensitive Architecture; Understanding design philosophy & process; Learning from design quality, Literature/book reviews; Architectural critiques.

**Module-5: Design Communication** – Design communication by incorporating suitable materials and structure, generating creative design responses, communicating the same through a variety of mediums like presentations, architectural representations, and model-making (manual/ digital).



**CO1: Outline** issues and concerns about context of different climatic zones through comparative case studies.

**CO2: Make use of** the required learnings towards formulation of design program through an analysis of data including climatic considerations, relevant literature and case studies.

**CO3: Analyse** the form and structure through explorations in geometry and understanding of site conditions and site analysis and applicable rules, norms and regulations.

**CO4: Justify** the built form through explorations and understanding of materials, construction techniques, site and climatic conditions and propose design solutions towards optimizing building forms and configurations for specific climatic conditions.

**CO5: Compile** detailed design through effective graphical, physical models and verbal communication and representation skills.

## REFERENCES

1. Hyde, R. (2013). Climate responsive design: A study of buildings in moderate and hot humid climates. Taylor & Francis.
2. Krishan, A. (Ed.). (2001). Climate responsive architecture: a design handbook for energy efficient buildings. Tata McGraw-Hill Education.
3. Chand, I., & Bhargava, P. K. (1990). Studies on design and performance of a non-conventional system of natural ventilation in buildings. *Solar & wind technology*, 7(2-3), 203-212.
4. Majumdar, M. (Ed.). (2001). Energy-efficient buildings in India. The Energy and Resources Institute (TERI).
5. Jagadish, K. S. (2008). Alternative Building Materials Technology. New Age International Publishers.

**COURSE TITLE: BUILDING MATERIALS AND CONSTRUCTION SYSTEMS-IV**

**COURSE CODE: ARC 2004**

**COURSE CREDIT: 5**

## COURSE INTENT

The coursework intent to familiarize students with a comprehensive overview of Steel as building materials in construction systems. The students will acquire knowledge of different topics of steel as building material in construction such as staircases, façade, spaceframes, prefab and roofing, and their use in architectural design.



## COURSE CONTENT

**Module-1: Introduction to steel as construction material** - Concept, Composition; Importance of steel; mechanical & physical properties, Uses, Steel & Alloys, defects & treatment, market forms of steel.

**Module-2: Frame Connection** - Concept of Beam & Column Joints, Different types of connection- bolting, riveting and welding, Understanding of castellated beam.

**Module-3: Roofing System (trusses, Space frames/Geodesic dome)** - Roofing (trusses) - Steel trusses  
- Angular and Tubular trusses for various spans - fabrication and erection details with roof covering sheets; Specialized structural systems like Geodesics, Space Frames and Layered Grids. Types, advantages, properties, construction details, design considerations, applications.

**Module-4: Façade systems, Staircases and openings** - Curtain walls - Façade systems - Curtain walls, classification, assemblies, structural glazing system. Stairs, Metal doors & windows- Special doors - sliding, and folding, collapsible shutters, rolling shutter, fire resistant steel doors.

**Module-5: Overview of Prefab** - Concept, Types, Necessity, Advantages & disadvantages, Modular coordination: Grid systems, layout. Code provisions. Structural concepts with examples.

## COURSE OUTCOME

**CO1: Outline** steel as building material for construction, its type, and properties.

**CO2: Classify** the frame connection details with steel.

**CO3: Identify** the applications of building construction methods using steel as a roofing system.

**CO4: Make use of** steel as building material in the façade system, staircase and opening.

**CO5: Categorize** the various types of prefab components and their different construction techniques.

## REFERENCES

1. Prabhu, B. T. (1987). Building Drawing and Detailing. SPADES, Calicut.
2. Shah, M. G. and Kale, C. M. (2014). RCC Theory and Design. Trinity Press, New Delhi.
3. Deplazes, A. (2018). Constructing architecture: materials, processes, structures. Birkhauser, Basel, Switzerland.
4. Ching Francis, D. K. (2018). Building Construction Illustrated. John Wiley and Sons, New Delhi.
5. Boake, T. M. (2013). Understanding steel design: an architectural design manual. Walter de Gruyter.



**COURSE TITLE: DIGITAL APPLICATIONS-III**

**COURSE CODE: ARC 2006**

**COURSE CREDIT: 4**

**COURSE INTENT**

To equip students with essential Building Information Modeling (BIM) skills, enabling modeling, parametric design, and project data management for architectural applications. Emphasis is on understanding BIM as a tool for building component modeling, 3D form exploration, and scheduling

**COURSE CONTENT**

**Module-1: BIM Basics and Revit Project Setup** - Introduction to Building Information Modeling and Revit software, overview of the interface and project environment setup including levels, grids, units, modeling primary building components such as walls, floors, roofs, ceilings, doors, and windows, organizing plans, sections, and elevations, applying annotation tools such as dimensions, tags, and text, managing view templates and project standards.

**Module-2: Parametric Components and Architectural Component Design** - Creating and modifying architectural components like doors, windows, walls, stairs, and railings, etc, using parametric modeling, using reference planes, dimensions, and constraints to control geometry, and incorporating materials to reflect design intent

**Module-3: Form Exploration and 3D Modeling Workflow** - Developing 3D forms using conceptual massing tools including extrusion, revolve, sweep, blend, Boolean, etc, applying adaptive components and surfaces for developing architectural geometries, managing 3D views for spatial evaluation and early stage form iteration.

**Module 4: Schedule Setup, Quantity Takeoff, and Sheet Composition** - Creating and formatting schedules for building components including doors, windows, rooms, materials, generating areas and quantity takeoffs for early estimates, organizing drawing sheets with title blocks, legends, and view placement, managing revision indicators and keynotes for structured documentation output

**COURSE OUTCOME**

**CO1: Outline** the significance of REVIT as a strong drafting and rendering tool.

**CO2: Demonstrate** elementary algorithms to model complex forms and relationships using geometric concepts and parametric tools.



**CO3: Outline** parametric models to enhance the delineation of architectural design.

**CO4: Choose** exact methods of digital prototyping.

**CO5: Develop** better visualization through use of correct models and software.

## REFERENCES

1. Williams, H. P. (2013). Model building in mathematical programming. John Wiley & Sons.
2. The Energy Conservation Building Code of India (ECBC) (2017), Bureau of Energy Efficiency
3. Eco-Niwas Samhita (2018), Bureau of Energy Efficiency.
4. SP 41: Handbook on Functional Requirements of Buildings (Other than Industrial Buildings) by Bureau of Indian Standards.
5. Vishal Garg et. al. (2021). Building Energy Simulation - A Workbook Using Design Builder™.

**COURSE TITLE: FUNDAMENTALS OF SUSTAINABLE DESIGN**

**COURSE CODE: ARC 2008**

**COURSE CREDIT: 2**

## COURSE INTENT

The coursework intends to familiarize students understanding of sustainable design principles, practices, and their application in architecture by introducing various sustainable approaches in architectural design. To sensitize students with the social dimension of sustainable architecture and highlight the importance of community engagement in the design process.

## COURSE CONTENT

**Module-1: Introduction to Sustainable Design** - Define sustainable design and its relevance to the present world. Understand the global challenges and the role of architects in sustainability.

**Module-2: Historical Overview of sustainable architecture** – Overview of the historical context and evolution of sustainable architecture. Understand the traditional architectural styles, specifically Indian, and its relationship with sustainable design.

**Module-3: Green Buildings** - Understand of green building concept. Impact, benefits of building green concerning sustainability. Introduction to various rating systems and the related criteria for assessments.

**Module-4: Sustainable Approaches in Architectural Designs** - Introduction to biomimicry principles and applications in architecture. Understanding biophilia and its importance in architecture. Identifying



strategies for incorporating biophilic design elements into architectural projects using case studies.

**Module-5: Social Sustainability and Community Engagement** - Understanding the social aspects of sustainability in architecture. Integrating community needs and aspirations into design. Case studies of socially sustainable architectural projects. Introduction to techniques for stakeholder engagement and participatory design processes and apply them to arrive at specific design solution.

## COURSE OUTCOME

**CO1: Outline** the relevance of Sustainable approach in architectural design.

**CO2: Illustrate** the relationship between traditional architecture and sustainable design.

**CO3: Identify** the role of Green Buildings in sustainable design.

**CO4: Make use of** sustainable approaches for architectural designs.

**CO5: Utilise** techniques for stakeholder engagement and participatory design processes.

## REFERENCES

1. Brown, L. R., & Shaw, P. (1982). Six Steps to a Sustainable Society. Worldwatch Paper 48. Worldwatch Institute, 1776 Massachusetts Avenue, NW, Washington, DC 20036.
2. Woolley, T., & Kimmins, S. (2003). Green building handbook: Volume 2: A guide to building products and their impact on the environment. Routledge.
3. Kibert, C. J. (2016). Sustainable construction: green building design and delivery. John Wiley & Sons.
4. Pawlyn, M. (2019). Biomimicry in architecture. Riba Publishing.

**COURSE TITLE: STRUCTURES-II**

**COURSE CODE: ARC 2010**

**COURSE CREDIT: 3**

## COURSE INTENT

The coursework intends to empower students to deeply comprehend the basic knowledge and skills for analysing key structural aspects. The students will acquire knowledge of strengths of materials which allows them to properly select and utilize fundamental materials in architectural design, establishing a firm foundation for practical applications in building and structural engineering.

## COURSE CONTENT



**Module-1: Structural behaviour of beams** - Concept of bending moment and shear force. Analysis of statically determinate beams like simply supported beam, cantilever beam etc. Application of BMD and SFD in architectural design.

**Module-2: Theory of simple bending: Bending stress, shear stress** - Concept of pure bending. Bending equation. Introduction to bending stress and shear stress. Simple numerical problems to understand application of bending equation in structural analysis.

**Module-3: Deflections in beam** - Concept of deflection. Importance and application in design of determinate structures. Simple derivations with different load conditions and support conditions.

**Module-4: Analysis of Columns** - Introduction to columns. Types of columns. Structural behaviour of short columns under axial and eccentric loads, Euler's, and Rankine's method for analysis of columns.

**Module-5: Overview of stress and strain in building materials** - Introduction to tensile load, compressive load, thermal load, importance and application of stress and strain in structural design, concept of flitched beam.

## COURSE OUTCOME

**CO1: Define** the various types of beams and describe the fundamentals of shear force and bending moment for different types of beams.

**CO2: Explain** the concepts of simple bending and shear stress.

**CO3: Outline** the concept of deflection of the beam for various loading and support conditions.

**CO4: Apply** the concept of columns and compare the behaviour of short columns under axial and eccentric load.

**CO5: Identify** the various types of stress and behaviour of the building materials under tension and compression.

## REFERENCES

1. Basavarajiah, B.S. and Mahadeveappa, P. (1990). Strength of Materials. CBS Publishers, New Delhi.
2. Rao, D. P. (2002). Introduction to Strength of Materials. Universities Press.
3. Ramamrutham, S., & Narayanan, R. (1999). Elements of Strength of Materials. Dhanpat Rai Publishing Company (P) Ltd.
4. Bhavikatti, S. S. (2013). Strength of Materials. Vikas Publishing House.



**COURSE TITLE: HISTORY OF ARCHITECTURE-II**

**COURSE CODE: ARC 2012**

**COURSE CREDIT: 3**

**COURSE INTENT**

The coursework fosters an in-depth exploration of emergence and evolution of Islamic architecture in India focusing on the origin of Islam in India, Islamic dynasties, Mughal Architecture, Maratha, and Rajput Architecture. The students acquire knowledge of evolution, geographic and climatic influence, socio-political background, construction typology and architecture, material influence, and design styles of the cities and its built form.

**COURSE CONTENT**

**Module-1: Introduction to the Origin of Islam in India & Rajput Architecture (600-1206 AD)** - Origin of Islam and dynasties in India. Rulers and emperors, Timeline. First Built Mosque in India: Cheraman Jama Masjid, Kerala (History and current relevance), Slave dynasty- Qutub Complex; Khilji Dynasty- Alai Darwaza, Alai Minar, Rajput Architecture: Chittorgarh Fort, Jaiselmer Fort.

**Module-2: Sayyid & Lodis (origin of Delhi Sultanate, 1228 -1336 AD)** - Expansion of Islamic dynasties in Delhi and neighboring counterparts, Rulers and emperors, Timeline. Social, cultural, and architectural Influence of Sayyids and Lodis. Lodi Tombs, Khirkee Mosque, Nizamuddin Dargah.

**Module -3: Adil Shahi Architecture, Bahamani Style (1336- 1565 AD)** - Evolution of Adil Shahi Architecture, Rulers and emperors, Timeline. Examples of: Bijapur City, in Delhi and neighboring counterparts. Social, cultural, and architectural Influence: Golconda Fort, Gol Gumbad, Cities and Art.

**Module -4: Mughal Architecture (1500-1700)** - Evolution of Mughal dynasty and Architecture, Rulers and emperors, Timeline. Social, cultural, and architectural Influence of Mughals: City of Delhi (Red Fort, Shahajanabad, Humayun's Tomb, Jama Masjid Delhi, Chandni Chowk), Mughal gardens, Mughal Art. Architecture of Fatehpur Sikri: Entrance Gate, Tomb of Salim Chisti, Jodha Bai Palace. City of Agra: Agra Fort, Taj Mahal, Mughal gardens, Mughal Art.

**Module -5: Maratha Forts Architecture (1526-1707 AD)** - Maratha Fort Architecture: Types of Forts, Typical Maratha Fort design. Jal durg (water forts), Giri durg (mountain/hill forts), Vana durg (forest



forts), Mahi durg (brick forts) and Nar durg(human forts) eg: Sindhudurg, Pratapgadh, and Raigad.

## COURSE OUTCOME

**CO1:** List the architectural components from Islamic/Maratha/Rajput Architecture and their significant features.

**CO2:** Illustrate the built environment, construction techniques, and materials used in used in Islamic/Maratha/Rajput Architecture.

**CO3:** Explain the physical characteristics in connection with geographical and geological aspects.

**CO4:** Identify the importance of typological evolution in Islamic/Maratha/Rajput architecture, influenced by socio-political, cultural factors, and regional influences.

**CO5:** Organise the significance of each architectural style in the overall design and their historical evolution.

## REFERENCES

1. Asher, C. B. (2008). The New Cambridge History of India.
2. Architecture of Mughal India, 1, Cambridge University Press.
3. Brown, P. (1976). Indian Architecture (Islamic period). Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
4. Tadgell, C. (1990). The History of Architecture in India from the Dawn of civilization to the end of the Raj. Longmon Group, U.K. Ltd., London.
5. Nanda, R. (2017). Humayun's Tomb: Conservation and Restoration. In Authenticity in Architectural Heritage Conservation (pp. 93-114). Springer, Cham.

**COURSE TITLE: BUILDING SERVICES-II**

**COURSE CODE: ARC 2014**

**COURSE CREDIT: 3**

## COURSE INTENT

The coursework intends to introduce Heating, Ventilation & Air Conditioning (HVAC) and the generation plus distribution of electrical power to buildings, ensuring a comprehensive understanding of their principles and applications in real-world scenarios.

## COURSE CONTENT

**Module-1: Fundamentals in Air Conditioning** - Air conditioning terminologies, fundamental requirements, and design considerations are explored alongside the adaptive thermal comfort model.

**Module-2: Working of air conditioning systems** - Design of air conditioning, types of HVAC systems,



ductwork, zoning of spaces, and indoor air quality are all considered in this exploration.

**Module-3: Power generation and distribution systems** - Concepts, technological options, concerns, and benefits of power generation, transmission, and distribution, along with smart grid and renewable energy, are covered in this exploration.

**Module-4: Standards and representation of electrical systems** - Understanding the electrical symbols, reading an electrical layout, and drawing an electrical layout on a plan are essential skills covered in this study.

**Module-5: Case Studies** - Understanding and observing an HVAC system within different types of buildings through case studies and site visits.

### COURSE OUTCOME

**CO1: Relate** basic knowledge of Mechanical ventilation and techniques of air conditioning.

**CO2: Explain** the working principles of various mechanical systems of air conditioning.

**CO3: Outline** various components of a typical electrification system for a building.

**CO4: Make use of** the relevant standards for quantification and representation of electrical system for a building.

**CO5: Select** various literatures, case studies/site visits for understanding HVAC and Electrification in a building.

### REFERENCES

1. BIS (2016) National Building Code of India. (2016). Bureau of Indian Standards, New Delhi.
2. Jones, W.P. (2019). Air Conditioning Engineering Applications and Design, 2nd Edition.
3. Dagostino, F. R., & Wujek, J. B. (1978). Mechanical and electrical systems in construction and architecture. Reston Publishing Company.
4. Stein Benjamin & Reynolds (2000). Mechanical and Electrical Equipment for Buildings, 9th Edition, John Wiley and Sons, NY.



## THIRD YEAR/ SEMESTER FIVE

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING - V**

**COURSE CODE: ARC 3001**

**COURSE CREDIT: 10**

### COURSE INTENT

This course is designed to impart knowledge and essential skills for comprehending commercial green building concepts, credits, and assessment systems, enabling students to develop sustainable development design programs. The course will equip students to evaluate sustainable design from site planning to final design, indoor environment, energy conservation, and optimization.

Probable projects in this typology could include Corporate buildings, commercial buildings etc. (**Site extent up to 2-4 Acres**).

### COURSE CONTENT

**Module-1: Theme & focus of design** - Study of Contemporary green building assessment Systems in the built environment; Identification of appropriate projects for adopting green building assessment systems; Development of design program with a focus on sustainable site planning, energy efficiency, indoor environmental quality, water efficiency, materials, resources, and innovation.

**Module-2: Exploration & Analysis** - Understanding design philosophy & process; Literature studies; Case studies; Site Study; Sustainable site planning considering erosion and sedimentation control, brownfield development, adaptive reuse, flood plain avoidance, etc. Building Design considering Complexity of Design: Focus on green building design and building services.

**Module-3: Design Process** - Development of built form considering building envelope and indoor environmental quality. Active, passive, and hybrid energy systems incorporating renewable Energy, improved fresh air ventilation, and innovation in building design.

**Module-4: Design development** - Design methodology documentation and presentation; Use of Building Information Modelling and energy simulation software, Reduction in Energy Demand, Onsite Sources and Sinks, Maximize System Efficiency, steps to Reduce Energy Demand and Use of Renewable Energy Sources; Design analysis and discussions incorporating building services and use of renewable energy



sources.

**Module-5: Design Detailing & Portfolio** - Communicate design strategies and choices effectively with clients and other building stakeholders through a comprehensive design portfolio with an analysis towards project feasibility through sustainable approach.

### COURSE OUTCOME

**CO1: Demonstrate** knowledge of concepts in green building assessment systems.

**CO2: Identify** and analyse the site context and the best practices through case studies & literature related to the project.

**CO3: Examine** sustainable design solutions from site planning to final design and indoor environment.

**CO4: Evaluate** the design through energy optimization using building energy simulation tools.

**CO5: Design** and detailing the built form and communicate through a comprehensive design portfolio with an analysis of project feasibility through sustainable approach.

### REFERENCES

1. Hegger, M., Fuchs, M., Stark, T., &Zeumer, M. (2012). Energy manual: sustainable architecture. Walter de Gruyter
2. Ching, F. D., & Shapiro, I. M. (2014). Green Building Illustrated. Hoboken.
3. Council, U. G. B. (2005). LEED for new construction and significant renovation Version 2.2 Reference Guide. USGBC: Washington, DC
4. Vol, G. M. (2010). Introduction to National Rating System–GRIHA an evaluation tool to help design, build, operate, and maintain a resource-efficient built environment. Ministry of New and Renewable Energy, Government of India & TERI-The Energy and Resources Institute, New Delhi.
5. Bureau of Energy Efficiency (2007) Code E. C. B. C, Bureau of Energy Efficiency Publications- Rating System, New Delhi.

**COURSE TITLE: DIGITAL APPLICATIONS-IV**

**COURSE CODE: ARC 3003**

**COURSE CREDIT: 4**

### COURSE INTENT

This course is aimed to help students understand parameters and techniques required for reducing energy demand through compliance with energy codes, standards, and rating systems by conducting building performance assessment, and whole building energy simulation modelling.



## COURSE CONTENT

**Module-1: Introduction** - Building performance assessment, Comfort Systems; Lighting systems, Energy Plus™ and Design Builder, etc, to model both energy consumption for heating, cooling, ventilation, lighting, and process loads and water use in buildings.

**Module-2: Prediction methods to enhance functional objectives of buildings** - Introduction to prediction models using available simulation tools and software and their application to the parametric models. Use of artificial intelligence in enhancing the functional objectives of building and its application in modelling.

**Module- 3: Building daylight simulation** - Conducting daylight analysis for Parametric models. Analyse and enhance daylight and optimize glare by using available modelling tools and methods.

**Module-4: Building heat and energy simulation** - Energy simulation for conceptual building information models using massing- Detailed parametric modelling using design elements- Rapid energy modelling and simulation with software. Conceptual Energy Analysis features to simulate thermal comfort. To produce energy consumption, carbon neutrality and renewable potential reports.

## COURSE OUTCOME

**CO1: Illustrate** the performance of the building based upon different parameters.

**CO2: Explain** the knowledge of Building Energy codes in building components.

**CO3: Outline** prediction methods in parametric models to enhance the functional objectives of buildings.

**CO4: Choose** parametric models for daylight performance through simulation

**CO5: Develop** parametric models for heat and energy performance through simulation.

## REFERENCES

1. Kubba, S. (2012). Handbook of green building design and construction: LEED, BREEAM, and Green Globes. Butterworth-Heinemann.
2. Haselbach, L. (2010). The engineering guide to LEED—New construction. McGraw-Hill, New York.
3. Garg, V., Mathur, J., & Bhatia, A. (2020). Building Energy Simulation: A Workbook Using Designbuilder™. CRC Press. (697.00285 GAR).
4. Clarke, J. (2007). Energy simulation in building design. Routledge. (696.011 CLA)



**COURSE TITLE: WORKING DRAWING-I**

**COURSE CODE: ARC 3005**

**COURSE CREDIT: 4**

**COURSE INTENT**

The course is aimed to develop the skills and techniques of preparation of Working drawings for the Building by taking an already self-designed project of an earlier semester and imparting training for drafting of working drawings and details with appropriate scale, specification, representation, and measurements.

**COURSE CONTENT**

**Module-1: Introduction** - Importance of working drawings, method for numbering sheets, placement of Centre Line, columns, measurements for Site Marking; Develop Set-out marking, Centreline & Excavation Layout.

**Module-2: Plinth Beam Layout** - Development of Plinth Beam layout and details.

**Module-3: Floor Plans** - Development of Floor Plans for Ground Floor, First Floor, Terrace Floor, and additional floors (if any).

**Module-4: Building Section and Elevations** - Development of Section through building showcasing structural details and building levels and Details for Elevations.

**Module-5: Staircase Details** - Development of staircase layout and section up to terrace floor level, Railing, Bull nosing, Numbering details.

**COURSE OUTCOME**

**CO1: Demonstrate** the understanding of drawing Set-out marking, Centre line & Beam Layout.

**CO2: Illustrate** the understanding of drawing Excavation and Plinth Layout.

**CO3: Build** Floor Plans – Ground Floor, First Floor, Terrace Floor.

**CO 4: Develop** Sections and elevations.

**CO 5: Apply** the understanding of drawing staircase details.

**REFERENCES**

1. Indian Standard CODE OF PRACTICE FOR ARCHITECTURAL AND BUILDING DRAWINGS.



2. (1993). New Delhi: Bureau of Indian Standards.
3. Bichard, K. S. (2004). WORKING DRAWINGS.
4. 3.Wakita, O. A., & Linde, R. M. (1994). The professional practice of architectural working drawings. John Wiley & Sons.
5. Thomas, M. L. (1978). Architectural Working Drawings: A Professional Technique. McGraw-Hill.
6. Spence, W. P. (1993). Architectural working drawings: Residential and commercial buildings. John Wiley & Sons.

**COURSE TITLE: STRUCTURES-III**

**COURSE CODE: ARC 3007**

**COURSE CREDIT: 3**

### **COURSE INTENT**

The course provides an overview of structural engineering principles with a focus on resilience to extreme natural pressures. Divided into two main parts, students first delve into the fundamentals of structural behaviour, including the analysis of indeterminate structures and load distribution principles. In the second part, disaster-resistant building designs are explored, ensuring students grasp the regulatory landscape.

### **COURSE CONTENT**

**Module-1: Fixed beam - Introduction to statically indeterminate beams** – definition - fixed beams- concept- and real-world examples in construction -methods of analysis for internal forces viz; Shear force and bending moment, plotting of SFD and BMD for various load cases; comparative analysis of structural behaviour with simple beams.

**Module-2: Continuous beam- Introduction to continuous beams** – definition - concept- and real-world examples in construction -methods of analysis -moment distribution method-for internal forces; Shear force and bending moment, plotting of SFD and BMD for various load cases; comparative analysis of structural behaviour with single spans both simple and fixed beams.

**Module-3: Portal frame - Introduction to portal frames** – definition - concept- and real-world examples in construction -methods of analysis (non-sway excluded)- moment distribution method-for internal forces; plotting of SFD and BMD. for various load cases; comparative analysis.

**Module-4: Elementary soil mechanics & Seismic engineering** - Elementary soil mechanics as relevant to foundation design and detailing for typical load bearing masonry wall; simple RCC footings-



elementary seismology - earthquake forces on building - basic study building geometry and construction material interactions- statutory guidelines for seismic resistant building design and detailing as per relevant IS codes/ building codes.

**Module-5: Wind resistant structures** - Study of wind forces and its significance on building design-factors which control the wind forces on building – relevant IS code for wind load consideration in design - basic study building geometry and construction material interactions- cyclones resistant building design and detailing as per relevant IS codes/ building codes.

### COURSE OUTCOME

**CO1: Explain** the understanding of simple numerical problems on fixed beams.

**CO2: Illustrate** the knowledge to solve simple numerical problems on continuous beams.

**CO3: Apply** and solve simple numerical problems on Portal frames.

**CO4: Make use of** fundamental principles of soil mechanics and explain the basics of earthquake-resistant structures.

**CO5: Develop** the concept of wind-resistant structures.

### REFERENCES

1. Wang C.K., (1953) Indeterminate Structural Analysis, McGraw Hill Book Company.
2. Punmia B.C., Jain A. K. (1970) Soil Mechanics and Foundations. Laxmi Publications.
3. Ramamrutham, (1986) Theory of Structures, Dhanpat Rai and Sons, Delhi.
4. Khurmi R.S., Khurmi N., (2000) Theory of Structures. S.Chand and Company Limited, New Delhi.
5. Murty CVR., (2002) IITK-BMTPC EQ Tips. National Information Center of Earthquake Engineering Indian Institute of Technology Kanpur Publication.

**COURSE TITLE: HISTORY OF ARCHITECTURE-III**

**COURSE CODE: ARC 301 1**

**COURSE CREDIT: 3**

### COURSE INTENT

This course is aimed to develop the knowledge and understanding of the historical evolution, settlement pattern, geographic and climatic influence, socio-political background, construction technology, material influence, and design principles of the cities and their built form during Early Christian, Gothic, Renaissance, Baroque, and Neo-Classical periods.



**COURSE CONTENT**

**Module-1: Early Christian, Byzantine and Romanesque Period (4th to 13th Century CE)** - Evolution of church, Explain the geographical, climatic, political, and socio-cultural, architectural influences and characteristics during the Early Christian Era; Introduction to Byzantine and Romanesque Architecture.

**Module-2: Onset of Gothic Period (12th to 15th Century CE)** - Evolution of Gothic Period & Architecture; Explain the geographical, climatic, political, and socio-cultural influences during the Gothic Era; Early & late Gothic churches & regional variations; Various examples of Gothic churches, England; and Cologne Cathedral, Germany; Gothic churches (built spaces and typologies).

**Module-3: Renaissance Period (15th to 17th Century CE)** - Evolution of Renaissance Period and Architecture. Explain the geographical, climatic, political, and socio-cultural influences during Renaissance Era; Ideologies and works of famous architects; Building components and architectural style of the Renaissance Era and construction techniques.

**Module-4: Baroque (17th to Mid-19th Century CE) & Rococo Architecture** - Evolution of Baroque and Rococo Architecture; Explain the geographical, climatic, political, and socio-cultural influences during Baroque and Rococo Era; Ideologies & Works of famous architects; Public spaces & plazas; Fountains; Vatican City, built spaces and typologies of buildings constructed in the Baroque Era.

**Module-5: Neo-Classicism Mid-18th to Mid-20th Century CE; Palladio's architecture; The Palladian window** - Introduction and Evolution of Neo-Classicism in Europe, Explain the geographical, climatic, political, and socio-cultural influences during the Neo-Classicism Era; Early Palladianism; Neo-Palladian, English Palladian architecture; Decline of Palladianism, Neoclassical Architecture- Origins; Characteristics; Regional trends – Examples from France, Germany, Spain, and European counterparts.

**COURSE OUTCOME**

**CO1: List** the architectural components from Early Christian to Christian Architecture with respect to its major features.

**CO2: Illustrate** the built environment, construction techniques, and materials used in Christian Architecture.

**CO3: Explain** the physical characteristics in connection with geographical and geological aspects.

**CO4: Identify** the importance of typological evolution in Christian Architecture, influenced by socio-political, cultural factors, and regional influences.

**CO5: Organise** the significance of each architectural component in the overall design and their historical



evolution.

## REFERENCES

1. Fletcher, S. B. (1987). *A History of Architecture*, edited by John Musgrove. Butterworth-Heinemann.
2. Asher, C. B. (2008). *The New Cambridge History of India*.
3. Gympel, J. (1996). *The story of architecture*. Goodfellow & Egan, Cambridge
4. Brown, P. (1976). *Indian Architecture (Islamic period)*. Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
5. Moffett, M., Fazio, M. W., & Wodehouse, L. (2003). *A world history of architecture*. Laurence King Publishing.

**COURSE TITLE: BUILDING SERVICES-III**

**COURSE CODE: ARC 3013**

**COURSE CREDIT: 3**

## COURSE INTENT

The coursework endeavours to deliver the students with an extensive comprehension of Acoustics and Illumination types & controls for various space typologies and requirements. The students will learn about Essential components, working, operation, and types of mechanical transport systems such as elevators and escalators. Fire safety and firefighting systems with relevant building codes.

## COURSE CONTENT

**Module -1: Introduction to Acoustics** - Physics of sound; sound measurement and sound propagation; Room acoustics; Acoustical materials & sound transmission; Acoustical defects; Environmental noise; Noise control techniques in different building types.

**Module -2: Acoustical Design & Sound Reinforcement Systems** - Consideration for stage design; Designing of stage; seating & false ceiling design; Acoustical Design of Theatres & Concert Halls, recording rooms; open air theatres; Sound reinforced systems; Calculations & designing of acoustical treatment of various spaces; Relevant case studies.

**Module-3: Artificial Lighting** - Introduction to Artificial lighting; interior and exterior; Introduction to popular lighting; Designs present in the lighting industry.

**Module -4: Fire Safety, Firefighting Systems & Mechanical Transport Systems** - Fire safety and firefighting systems in buildings; Introduction to Mechanical Transport Systems; Elevators - basic components, working & operation.



**Module -5: Related Building Code/ Regulations -** Building code/ regulations related to Acoustics; Artificial lighting; fire safety & Firefighting systems and Mechanical transport systems.

### COURSE OUTCOME

**CO1: Explain** the behaviour of sound and understand the acoustic properties of materials.

**CO2: Illustrate** the different built spaces with different end-user acoustical requirements.

**CO3: Outline** requirements for an acceptable illumination system for various building functions.

**CO4: Identify** the requirements and arrangements for the building's mechanical transport, fire safety, and firefighting systems.

**CO5: Make use of** the relevant building code/ regulations for compliance in design and detailing.

### REFERENCES

1. Barron, M. (2010). Auditorium Acoustics and Architectural Design. London: Taylor and Francis.
2. Clements-Croome, D. (2014). Intelligent Buildings introduction. Oxon: Routledge.
3. Lord, P., & Templeton, D. (1995). Detailing for Acoustics. London: Taylor & Francis.
4. Standards, B. o. (2016). National Building Code. New Delhi: BIS.
5. Templeton, & Saunders. (1987). Acoustic Design. London: Architectural Press.

### PROFESSIONAL ELECTIVES\*

**COURSE TITLE: CREATIVE PHOTOGRAPHY**

**COURSE CODE: ARC 4009**

**COURSE CREDIT: 2**

### COURSE INTENT

This course imparts to enhance student's visual senses through creative photography and also to understand the basic principles and composition in photography.

### COURSE CONTENT

**Module 1: Introduction to Photography:** Fundamental Concepts, Understanding the basic principles and concepts that form the foundation of photography. Understanding the various purposes and applications of photography in different contexts.

**Module 2: Study of Light & Exposure:** Understanding the importance of light in photography. Introduction to natural and artificial light sources, Hands-on practice by experimenting with different lighting conditions and exposure settings



**Module 3: Exploring Types of Photography:** It offers a comprehensive overview of various photography genres, including portrait, landscape, documentary, street, macro, and wildlife photography. Through discussions and practical demonstrations, participants gain insights into each genre's unique characteristics, techniques, and artistic considerations. Also, it encourages experimentation and skill development in different areas of interest within the realm of photography.

**Module 4: Conceptual Photography:** Conceptual photography goes beyond depicting the physical world, aiming to convey abstract ideas, emotions, or narratives through visual imagery. It utilizes symbolism, metaphor, and storytelling techniques to engage viewers on a deeper level, prompting reflection and interpretation of underlying concepts. This genre challenges viewers to look beyond the surface and contemplate the deeper meaning behind the images, making it a powerful medium for artistic expression and communication.

**Module 5: Comprehensive Exploration and Post-Production:** Examining Various Categories Exploration of photography across different categories, including topics, locations, objects, patterns, and cultural settings. Gaining a comprehensive viewpoint on the intricate and diverse aspects of photography. Post-Production Approaches- Extensive exploration of post-production techniques to refine and enhance photographs. Development of participants' proficiency in using editing tools to bring their creative vision to life.

## COURSE OUTCOME

**CO1: Show** fundamental photography principles: composition rules, exposure settings, and lighting techniques

**CO2: Identify** the importance of Light & shade & Exposure in Photography.

**CO3: Analyse** photography skills, principles and light techniques in different thematic photography.

**CO4: Evaluate** photographic compositions, concepts, elements, symbols, metaphor for the artistic expression.

**CO5: Create** a unique body of work by integrating diverse elements into themed photographic narratives.

## REFERENCES

1. Eastwood, G., & Meehan, J. (2012). Photographing the Elements: Capturing Nature's Most Extreme Phenomena with Your Digital Camera. Ilex Press.
2. Book: Davis, H. (2022). Composition & Photography: Working with Photography Using Design Concepts. Rocky Nook.



3. Book: Molnar, D. (2022). Learning to See: A Photographer's Guide from Zero to Your First Paid Gigs. Harper Horizon.

**COURSE TITLE: ARCHITECTURAL JOURNALISM**

**COURSE CODE: ARC 4011**

**COURSE CREDIT: 2**

#### **COURSE INTENT**

The course intends to provide an opportunity for understanding and expressing various issues concerning architecture, design and built environment.

#### **COURSE CONTENT**

**Module 1: Foundations of Architectural Discourse** - Introduction to Architectural Discourse Understanding the significance of discourse in architecture, design, and the built environment. Exploring the historical context and evolution of architectural discourse. Critical Thinking in Design Studies Emphasizing the role of critical thinking in the field of design. Connecting critical thinking to essential decision-making in architectural practice.

**Module 2: Reading Architectural Contexts** - Methods of Inquiry in Architecture Introducing various methods of inquiry used in architectural research. Developing skills in analysing and interpreting architectural contexts. Exploration of Concerns and Opportunities Encouraging learners to identify concerns and opportunities within the architectural and built environment. Reading and critically evaluating existing architectural narratives.

**Module 3: Developing Design Narratives Crafting Design Narratives** - Teaching the art of developing narratives in design arguments. Providing tools and techniques for effective communication of design ideas. Perceived Arguments in Design Understanding the role of perceived arguments in architectural discourse. Exploring how design decisions are communicated and perceived.

**Module 4: Essential Decision-Making in Architecture** - Decision-Making Processes Examining essential decision-making processes in architecture. Case studies illustrating the impact of decisions on the built environment. Encouraging Learners in Decision-Making Providing scenarios for learners to make critical decisions in design studies. Fostering a sense of responsibility in architectural decision-making.

**Module 5: Presenting Architectural Arguments** - Art of Effective Presentation Developing skills in presenting architectural arguments. Exploring various mediums for presenting design concepts and narratives. Reflective Practices in Architectural Discourse Encouraging reflective practices to refine



architectural arguments. Creating a platform for peer review and constructive critique in the presentation of architectural ideas.

## COURSE OUTCOME

**CO1: Demonstrate** various integral aspects of journalism.

**CO2: Identify** the purpose and significance of journalism in architecture.

**CO3: Discover** a method and develop techniques of different kinds of narratives.

**CO4: Determine** the publishing process involved in architectural journalism.

**CO5: Construct** the importance of emerging media and the role of ethics.

## REFERENCES

1. Johnson, Paul-Alan. (1994) *The Theory of Architecture. Concepts, Themes and Practices*. John Wiley & Sons. Inc.
2. Wiseman, Carter. (2014) *Writing Architecture: A Practical Guide to Clear Communication about the Built Environment*.
3. Ada Louise Huxtable. (2010) *On Architecture: Collected Reflections on a Century of Change*.
4. Hearn, Fil. (2003) *Ideas that shaped buildings*. The MIT Press.
5. Frampton, Kenneth. (2016) *Modern Architecture – A Critical History*. Thames & Hudson.

**COURSE TITLE: VASTUVIDYA**

**COURSE CODE: ARC 4013**

**COURSE CREDIT: 2**

## COURSE INTENT

This course imparts theoretical knowledge and practical skills, emphasizing the application of Vaastu principles in modern Architectural, Design, and Planning contexts, aligning with contemporary science and technology.

## COURSE CONTENT

**Module 1: Introduction to Vastuvidya** - Understanding the ancient and scientific roots of Vastuvidya, its concept, evolutionary nature, and relevance in planning, designing, architecture and construction.

**Module 2: Fundamental Principles of Vastu** - Basic unit of measurements – purushapramanam, hastham, padmam, angulam & yavam; vertical proportioning & Thalam concept; basic geometry; Vastupurusha Mandala; five elements (Panchabhutas), cardinal and intercardinal directions (Dikpalas),



and their impact on design.

**Module 3: Integration of Vastu in Planning, and Architectural design** - Exploring the implementation of Vastu in town planning and traditional architecture in India and understanding its planning, designing & construction aspects. Case studies. Planning, design & construction of temples, halls, residential buildings, street patterns, planned settlements etc.

**Module 4: Technology in Vastuvidya** - Classification of materials, brief description of the characteristics & uses of sila, istaka, daru, loha, mrilsna, sudha; Assembly & joinery; Construction methods - Foundations. Walls, columns, utharam & roof structure, the system of proportional measurements & thumb rules; investigation of Land; tests for suitability.

**Module 5: Consultation in Vastuvidya** - Roles & duties of Silpis and Vastukar; hands-on exercises for identifying common vastu doshas (imbalances) in existing structures and applying corrections to enhance positive energy flow; tailoring Vastu recommendations to create personalized and harmonious living and working spaces.

## COURSE OUTCOME

**CO1: Explain** traditional architecture in India with respect to context-relevance and Vastushastra.

**CO2: Outline** the basics of Vastuvidya and the science behind it.

**CO3: Illustrate** the technological and social aspects of Vastuvidya towards modern design regulations.

**CO4: Make use of** Vastuvidya in planning and design of towns and building construction.

**CO5: Apply** the Vastuvidya concepts for planning at urban and residential scales.

## REFERENCES

1. Prabhu, B.T.S. & Achyuthan, A. (1997). Design in Vastuvidya. Vastuvidyapratisthanam.
2. Choudhury, V. (1998). Indian architectural theory: Contemporary uses of VastuVidya. Routledge.
3. Raman, V.V. (2000). Principles and practice of Vastu Shastra. Vidya Bhawan.
4. Babu, B.N. (2000). Handbook of Vastu. UBS Publishers Distributors.
5. Borden, M. (2011). Vastu Architecture: Design Theory and Application for Everyday Life. CreateSpace Independent Publications.
6. Bharadwaj, A. (2013). Scientific approach to Vaastu-shastra. Abhinav Publications.



**COURSE TITLE: CULTURAL STUDIES**

**COURSE CODE: ARC 4015**

**COURSE CREDIT: 2**

**COURSE INTENT**

This course imparts fundamental insights into culture and its impact on architecture, emphasizing cultural beliefs' influence on the built environment. Students learn to appreciate diverse Traditional Knowledge Systems, comprehend architecture as a reflection of cultural values, and analyse cultural influences on architectural design, fostering sensitivity in design principles.

**COURSE CONTENT**

**Module 1: Introduction to Cultural Studies** - Investigating culture studies examining its definition, components, and significance. Defining cultural studies involves understanding its scope, importance, and interdisciplinary nature, particularly concerning architecture.

**Module 2: Society and Culture** - Studying the symbiotic relationship between culture and society reveals their mutual influence. How cultural norms shape social institutions like family, religion, education, economy, and politics.

**Module 3: Approaches to Cultural studies** - Various approaches to cultural studies, including anthropological, sociological, and semiotic perspectives, contribute to a comprehensive exploration of this field.

**Module 4: Culture and Built Environment** - Investigating how cultural beliefs influence architectural principles involves exploring connections between cosmological models, architectural forms, and cultural beliefs. Examine the role of geo-cultural regions towards shaping the built environment and interactions between nature and culture, leading to diverse Traditional Knowledge System through examples.

**Module 5: Cultural relevance in Architecture** - Recognizing cultural sensitivity's significance in architecture, fostering diversity, and raising awareness in design.

**COURSE OUTCOME**

**CO1: Outline** the understanding of culture and its key elements.

**CO2: Explain** symbiotic relationship between culture and society.

**CO3: Classify** the various approaches to cultural studies.



**CO4: Identify** the impact of cultural beliefs on the built environment

**CO5: Make use of** cultural influences on the built environment through architectural design.

## REFERENCES

1. Mcadams, M. A., Cantu, J. T., & Vassoler-froelich, I. (2012). *The Geography, Politics, and Architecture of Cities: Studies in the Creation and Complexification of Culture*. N.Y, Lewiston: Edwin Mellen Press.
2. Rapoport, A. (1969). *House Form & Culture*. Prentice Hall.
3. Roth, L. M., & Clark, A. C. R. (2018). *Understanding Architecture: Its Elements, History, and Meaning*. Routledge.
4. Vellinga, M., & Asquith, L. (2005). *Vernacular Architecture in the Twenty-First Century*. Taylor & Francis.

**COURSE TITLE: INTERIOR ILLUMINATION**

**COURSE CODE: ARC 4017**

**COURSE CREDIT: 2**

## COURSE INTENT

The coursework aims towards providing students with a well-rounded education in interior illumination integration with daylighting, covering both the theoretical and practical aspects of the field, while also considering the evolving trends and technologies in lighting design.

## COURSE CONTENT

**Module 1: Introduction to Interior Illumination** - The Importance of Interior Illumination, Lighting Terminology and Concepts, Light Sources and Technologies. Highlight Lighting Technologies: Incandescent Lighting, Fluorescent Lighting, LED Lighting, Emerging Lighting Technologies.

**Module 2: Luminaires and Fixtures** - Types of Luminaires, Fixture Design and Aesthetics, Fixture Placement and Mounting, Lighting Control Integration. Lighting Design Principles: Visual Comfort and Ergonomics, Lighting for Different Interior, Spaces, Mood and Ambiance in Lighting, Contrast, Shadow.

**Module 3: Lighting for Specific Environments** - Residential Lighting, Commercial and Office Lighting, Hospitality and Restaurant Lighting, Healthcare and Hospital Lighting, Retail and Display Lighting. Lighting and Aesthetics: Artistic and Decorative Lighting, Creating Focal Points with Lighting, Sculptural and Architectural Lighting, Light as an Artistic Element.



**Module 4: Energy Efficiency and Sustainability** - Energy-Efficient Lighting Design, Environmental Impact and Sustainability, Lighting Certifications and Ratings, Codes and Regulations.

**Module 5: Project Design and Implementation** - Design Process and Workflow, Project Planning and Budgeting.

### COURSE OUTCOME

**CO 1: Define** the fundamentals of Lighting, Lighting Terminology and Concepts and principles.

**CO 2: List** the various techniques, technologies, and materials for the designing of lighting systems.

**CO 3: Classify** various components of lighting based on purpose and function of interior spaces.

**CO 4: Develop** the knowledge of lighting design to achieve energy efficiency and sustainability.

**CO 5: Choose** the design strategies for various lighting techniques in interior spaces.

### REFERENCES

1. Fuller, M. (1985). Concepts and practice of Architectural Daylighting. Van Nostrand Reinhold Co.
2. Egan, D. M. (1983). Concepts in Architectural Lighting. McGraw Hill Book Company.
3. Blakemore, R. G. (2005). History of Interior Design and Furniture: From Ancient Egypt to Nineteenth-Century Europe. Wiley Publishers.
4. Alonzo, R. J. (Elsevier). Electrical Codes, Standards, Recommended Practices and Regulations.
5. Government of India. (2011). National Lighting Code.



## THIRD YEAR/ SEMESTER SIX

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING - VI**

**COURSE CODE: ARC 3002**

**COURSE CREDIT: 10**

### COURSE INTENT

The course intends to make the students understand various principles and aspects involved in the design of public buildings. To enable students to develop a comprehensive design proposal that addresses unique challenges associated with designing spaces for the public, including enabling a barrier-free environment.

Probable projects in this typology could include Institutional, educational, assembly buildings. (**Site extent up to 5 acres**).

### COURSE CONTENT

**Module-1: Principles of Design of Public Buildings** - Overview of concepts and principles of Architectural design with specific focus on design of public buildings. Understanding of importance of spaces within, around buildings. Understanding client, project and contextual requirements.

**Module-2: Historical, Social and Cultural Context** - Exploration of historical, social and cultural influences of the design of public buildings. Study of Architectural styles, impact of socio - cultural contextual aspects in shaping of public spaces through case studies and literature studies.

**Module-3: Site Context** - Understanding the importance of site selection, contextual aspects in the design of public buildings. Exploration of Inter relationship of buildings and its surroundings using related studies.

**Module-4: Sustainable, Functional planning** - Integration of sustainable design principles into architectural design process. Principles of energy efficiency, renewable materials, green building certifications and minimizing environmental impact to be adopted. Aspects related to functional requirements of space planning of public buildings like circulation, accessibility, regulatory norms, standards, universal design, barrier compliance, design guidelines and building codes.

**Module-5: Building Systems, Construction Techniques and services** - Integration of Building systems including structural, mechanical, intelligent systems, construction methods and choice of materials.



Integration of all services at site and building level.

## COURSE OUTCOME

**CO1: Demonstrate** the understanding of principles of design of Public Buildings addressing the project and contextual requirements.

**CO2: Make use of** literature and case studies the influence of historical, socio – cultural aspects into shaping of public buildings.

**CO3: Analyse** site context and inter relationship of building and surroundings.

**CO4: Appraise** principles of sustainability and functional aspects of public building design.

**CO5: Develop** integrated holistic building design including use of appropriate building systems, construction techniques and services at site and building level communicating through a comprehensive design portfolio.

## REFERENCES

1. Peloquin, A. A. (1994). Barrier-free residential design. New York, NY: McGraw-Hill.
2. Wester, L. M. (1990). Design communication for landscape architects. Van Nostrand Reinhold Company.
3. Ternoey, S., Bickle, L., Robbins, C., Busch, R., & McCord, K. (1984). Design of energy-responsive commercial buildings (No. SERI/SP-254-1538D). Solar Energy Research Inst., Golden, CO (USA).
4. Crosbie, M. J. (2003). Designing the world's best museums and art galleries. Images Publishing Group, Australia
5. Sasikumar, K., & Krishna, S. G. (2009). Solid waste management. PHI Learning Pvt. Ltd.

**COURSE TITLE: WORKING DRAWING-II**

**COURSE CODE: ARC 3004**

**COURSE CREDIT: 4**

## COURSE INTENT

The objective of this course is to develop the skills and techniques of preparation of Working drawings for the Site & Building level services and details by taking an already self-designed project of an earlier semester and imparting training for drafting of working drawings and details with appropriate scale, specification, representation, and measurements.

## COURSE CONTENT



**Module-1: Plumbing Service Layout** – Development of Plumbing layout drawings for Toilet and kitchen.

**Module-2: Electrical Service Layout** - Development of Electrical layout drawings for all floors.

**Module-3: Openings** - Door and Window details, Grill design and detailing

**Module-4: Interiors** - Detailed working drawing for interior of any room showing Floor finishes, Wall finishes, RCP with Lighting layout & Required storage.

**Module-5: Site Development and Sanction Drawings** - Development of Site plan with compound wall, gate design and related details, working drawing required for approval of a project from municipal approval bodies.

### COURSE OUTCOME

**CO1: Demonstrate** detailed Plumbing layout for Toilet, and kitchen.

**CO2: Illustrate** an electrical layout for all the floors of the project.

**CO3: Outline** grill design, Door details, and Window details.

**CO4: Develop** a detailed interior of any room from the project.

**CO5: Organise** the site related details, sanction drawing and process of approval at the Urban local body.

### REFERENCES

1. BIS (1993) Code of Practice for Architectural and Building Drawings (is.962:1989). Bureau of Indian Standards, New Delhi.
2. Styles, K. (2014). Working drawings handbook. Elsevier.
3. Wakita, O. A., & Linde, R. M. (1994). The professional practice of architectural working drawings. John Wiley & Sons.
4. Thomas, M. L. (1978). Architectural Working Drawings: A Professional Technique. McGraw-Hill.

**COURSE TITLE: RESEARCH TECHNIQUES**

**COURSE CODE: ARC 3006**

**COURSE CREDIT: 3**

### COURSE INTENT

This course is intended to equip students with knowledge of research methods and techniques so as to undertake research in Architectural Design and related disciplines such as urban design, urban planning,



architectural conservation etc., The course aims to give students skills for critical reading of research literature and for developing a research proposal for their project.

## COURSE CONTENT

**Module-1: Introduction to research** - Introduction to Research Methodology and its relevance in architecture; Objective of Research, Types of Research, Research Methods and Methodology, Scientific method of Research, Research Process. Types of research in architecture, areas of research in architecture, qualitative and quantitative paradigms.

**Module-2: Research Process** - Types of Research; Research methods & Research methodology; Research Process; Review of literature, research statement; Framing Research Question; Research design – need, components, considerations.

**Module-3: Data Collection & Sampling** - Primary data; methods of data collection; survey & observation; Questionnaires - types, aspects, sequence, Observation- types, characteristics, advantages, limitations etc., recording observations; Secondary data- sources, characteristics; Other Methods of Survey - visual, use of mechanical devices etc.; Sampling - need, significance, methods, classification, characteristics, determining sample size, time, event sampling etc.

**Module-4: Data Analysis** - Content Analysis by Secondary data analysis; Understanding the relative advantages, disadvantages and application of various methods mentioned above and choosing a method appropriate for research to achieve its objectives; Data Documentation and Analysis: Understanding the nature of data collected and methods of analysis suitable for that data (graphical / numerical / descriptive).

**Module-5: Report, Research Paper & proposal writing** - Purpose, characteristics, guidelines, steps, format, structure, contents, presentation, referencing style, ethical issues: plagiarism, Journals – writing, selection, metrics etc.

## COURSE OUTCOME

**CO1: Demonstrate** a clear understanding of the objectives and significance of research in the field of architecture.

**CO2: Explain** the concept of a research problem and its role in the research process.

**CO3: Outline** the significance of various components within the research design and their implications for research outcomes.



**CO4: Identify** the select appropriate sampling techniques for quantitative research and qualitative research based on research objectives and constraints.

**CO5: Develop** a clear and concise research report, ensuring that each section serves its intended purpose and flows logically from one to the next.

## REFERENCES

1. Lucas R., (2016) *Research Methods for Architecture*, Laurence King Publishing.
2. Groat, L. N., & Wang, D. (2013). *Architectural research methods*. John Wiley & Sons.
3. Deming, E. M., & Swaffield, S. (2010). *Landscape architectural research: Inquiry, strategy, design*. John Wiley & Sons.
4. Knowles, C., & Sweetman, P. (2004). *Picturing the social landscape: Visual methods and the sociological imagination*. Routledge.
5. Sanoff, H. (2016). *Visual Research Methods in Design (Routledge Revivals)*. Routledge.
6. Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

**COURSE TITLE: HOUSING AND ECONOMICS**

**COURSE CODE: ARC 3008**

**COURSE CREDIT: 3**

## COURSE INTENT

The course aims to introduce students to the evolution, concepts, and trends in Indian housing. It also familiarizes them with issues like housing shortage, policies, regulations, schemes, housing economics, financial institutions, and slums.

## COURSE CONTENT

**Module-1: Overview of Housing** - Concept of shelter, Timeline, Dynamics of housing- users, need, supply & demography &, providers, economic forces, terminologies; migration, urbanization, scale, scope, types & ownership; construction industry, current trends, realty sector.

**Module-2: Housing Issues** - Significance in National Development; Urban & Rural housing in India: statistics, problems-slums, shortage etc., Issues, Challenges; Current scenario; Planning principles & policies; Demography &, Role of different institutions; Stake holder analysis, current typologies, appropriate housing requirements, best practices.

**Module-3: Housing Legislations** - National & State Housing Policy, Development control regulations,



Acts & Bye laws, Strategies, Government & non-governmental agencies, Competent authorities, Schemes- PPP, SRA, Redevelopment, Sites & services etc.

**Module-4: Housing Economics** - Concepts, issues, aspects; Land & housing economics- valuation, rent, sinking fund, development cost.

**Module-5: Housing Finance** - As a key driver for economy, housing finance market & characteristics, sources, key constraints, finance agencies & institutions, Real estate, Low cost housing, affordable housing; Incremental housing; and case studies in India.

## COURSE OUTCOME

**CO1: Outline** different attributes and parameters related to housing.

**CO2: Illustrate** the housing issues, challenges in Indian context and the role of different related institutions.

**CO3: Demonstrate** the legislative framework related to housing policies, regulations, strategies and schemes at state and national level.

**CO4: Identify** concepts, issues and aspects related to housing economics.

**CO5: Analyse** the role of housing finance, evolution and the institution in India.

## REFERENCES

1. Robbins, G. (2008). Art of Ancient Egypt. Thames Hudson.
2. Ashok Kumar Jain, (1992). Building Systems for Low Income Housing. Management Publishing House.
3. Guru Charan Mathur, (1993). Low Cost Housing in Developing Countries. Oxford & IBH Publishing Company.
4. Sam Davis, (1995). The Housing Boom and Bust.
5. Ashok Kumar Jain, (1992). Building Systems for Low Income Housing Management. Publishing House.

**COURSE TITLE: HISTORY OF ARCHITECTURE-IV**

**COURSE CODE: ARC 3010**

**COURSE CREDIT: 3**

## COURSE INTENT

The intent of this course is to analyse, examine and evaluate Architecture styles that emerged during the Industrial revolution on the global level and the architectural practices in India's pre- and post-Independence to contemporary times.



**COURSE CONTENT**

**Module-1: Introduction to Industrialization and its impact on Architecture** - Industrial revolution and its impact on cities, transportation, architecture, and communication. Colonial India and Princely states- Indo Saracenic, Gothic and Neo-Classical Architecture with examples, London, Crystal Palace, Paris- Eiffel tower.

**Module-2: Movements and Masters** - Pre-Modernism and Modernism, Late 19th Century CE to 20th Century CE; Arts and Crafts movement, Art Nouveau, Art Deco; Expressionism; De Still movement; Cubism; Organic Architecture & works of Frank Lloyd Wright & Antonio Gaudi; Works of other significant architects; Modernism: Development of Rationalism & Functionalism; Bauhaus; Principles of Modernism; International style; Schools of thought; Ideas & works of Great Masters: Le-Corbusier, Walter Gropius, Mies Van Der Rohe, Frank Lloyd Wright, Alvar Alto, Oscar Niemeyer & others; Case studies from across the world.

**Module-3: Theories** - Theories of Post Modernism in the Twentieth Century; Theory of Post Modernism and Expression through Important Works; Inspiration for Other Concurrent Theories: Structuralism, Metabolism, Minimalism, Hi-Tech, Novelty, Critical Regionalism; Exploring Principles of Different Theories Through Important Examples. Post independent India, 20th century.

**Module-4: Post Independent India** - Overview of Post Independent India; Development of the new states; Role of Government for infrastructure development; Influences of various movements & works of Great Masters-Language & works of first-generation architects of Independent India.

**Module-5: Post Liberalized era** - 20th and 21st century CE; Understanding the major market paradigm shift across India post-1975; Understanding the Impact and trends in the construction field and architecture, Contribution of second-generation architects.

**COURSE OUTCOME**

**CO1: List** the architectural components of contemporary and transitional architecture during the industrial revolution worldwide and in India with respect to its major features.

**CO2: Illustrate** the built environment, construction techniques and materials used during Industrial revolution and contemporary architecture period.

**CO3: Explain** the physical characteristics of Contemporary architecture in connection with geographical and geological aspects.

**CO4: Identify** the importance of typological evolution in contemporary architecture, influenced by socio-



political, cultural factors and regional influences.

**CO5: Organise** the significance of each architectural component during Contemporary period in the overall design and their historical evolution.

## REFERENCES

1. Morris, A. E. J. (2013). History of urban form before the industrial revolution. Routledge.
2. Tillotson, G. H. R. (1989). The tradition of Indian architecture: Continuity, controversy and change since 1850 (p. 66). New Haven: Yale University Press.
3. Havell, E. B. (1913). Indian architecture: its psychology, structure, and history from the first Muhammadan invasion to the present day. J. Murray.
4. Lang, J. T., Desai, M., & Desai, M. (1997). Architecture and independence: the search for identity-- India 1880 to 1980. Oxford University Press, USA.
5. Jencks, C., Jencks, C., Jencks, C., & Jencks, C. (1977). The language of post-modern architecture.

**COURSE TITLE: ESTIMATION AND SPECIFICATION**

**COURSE CODE: ARC 3012**

**COURSE CREDIT: 3**

## COURSE INTENT

The course equips the students with the knowledge and skills necessary to accurately estimate the cost of construction projects, develop detailed specifications, BOQ, tender and contracts, enabling them to make informed decisions in the fields of architecture and construction. It covers principles of cost estimation, analysis of rates, preparation of detailed specifications for building components and systems.

## COURSE CONTENT

**Module-1: Specification** - Importance of specifications and types of Specifications, Material Specifications, Work Specification, General and Detailed specification, building specifications writing.

**Module-2: Introduction to Estimation** - Methods of estimations and unit of measurements for various items.

**Module-3: Detailed and abstract estimate of buildings** - Choose Methods of Estimation, build detailed estimates using centre line method.



**Module-4: Costing** - Rate Analysis and its importance. Market rate of material and Labour. Develop cost of construction for various works and Build abstract estimate of cost.

**Module-5: Tender and Contract** - Definition, Types, Conditions, Tender Notice, Documents, EMD, BOQ, Tendering process. Contract: Definition, Types, Contract agreement, necessity, contract document.

### COURSE OUTCOME

**CO1: Demonstrate** Specification of materials, workmanship & Specification writing.

**CO2: Outline** the methods of estimation and measurement units

**CO3: Make use of** detailed and abstract estimate of buildings.

**CO4: Identify** costing of material, labor, etc. & rate analysis.

**CO5: Utilise** the knowledge of tendering procedures and contracts.

### REFERENCES

1. Rangwala, S. C. (2023). Estimating, costing and valuation. Charotar Publishing House.
2. Dutta, B. N. (2023). Estimating and costing in civil engineering: Theory and practice including specifications and valuations. CBS Publishers & Distributors Pvt Ltd.
3. Chakraborti, M. (2019). Estimating, costing, specification & valuation in civil engineering. 29TH edition.



## FOURTH YEAR/ SEMESTER SEVEN

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING - VII**

**COURSE CODE: ARC 4001**

**COURSE CREDIT: 10**

### COURSE INTENT

The coursework intends to explore the design of mass housing with a focus on community design and sustainability. It focuses on stakeholder's perceptions and arriving at a contextual design with master plan and sustainable practices for site and services, building compliance and bye-laws, structural systems and use of contemporary building materials and exploring financial feasibility. The overall form can be a probable combination of high, mid, or low rise with high, mid, or low density, depending on the context and the feasibility of the site chosen for the design intervention. The design can incorporate the aspects of community and participatory planning, affordability, accessibility to basic services, incrementality etc. based on the context and the target group. **Site extent can be up to 30000 sq.mt.**

### COURSE CONTENT

**Module-1: Concepts and innovative approaches in housing design** - Study & analysis of various approaches and policies in housing design. Literature review of functional layouts, site and services, landscaping, structural systems and materials, universal access, community participatory planning.

**Module-2: Exploring relevant case studies and site documentation and surveys** - Analyse through case studies the context responsive design aspects and stakeholders' perception through surveys.

**Module-3: Conceptual design development** - Development of design programme and building compliance requirements, masterplan with site services - water, electricity, sanitation, drainage, RWH, solid waste management, landscaping, universal design. Detailing of individual tower/unit designs: through conceptual schemes and study models - physical and digital models.

**Module-4: Design development** - Detailed layout of individual units/towers with grid planning, structural systems, and usage of contemporary material with physical and digital models, detailed drawings.

**Module-5: Financial feasibility, guidelines, and sustainable practices** – Detailing out the costing, any control regulations or guidelines and sustainable practices/features incorporated in the design.



- CO1: Explain** context-oriented design, innovative approaches in housing design.
- CO2: Identify** case studies and conduct surveys for stakeholder perceptions.
- CO3: Theme** a master plan with various site parameters, design program and sustainability.
- CO4: Recommend** the detailed layout of individual units/towers and their services.
- CO5: Formulate** the building control regulations, costing and sustainable features of the design.

#### REFERENCES

1. Correa, C. (1999). Housing & urbanisation. Urban Design Research Institute.
2. Pugh, C. (1990). Housing and urbanisation: A study of India. SAGE Publications Pvt. Limited.
3. Jain, A. (n.d.). Housing for All. KHANNA PUBLISHING HOUSE.
4. Förster, W. (2006, January 1). Housing in the 20th and 21st Centuries. Prestel Publishing.

**COURSE TITLE: DISSERTATION**

**COURSE CODE: ARC 4003**

**COURSE CREDIT: 8**

#### COURSE INTENT

This course encourages the students to select the topic of their interest, related to architecture and/or allied courses, lined up with SDGs, focusing on critical understanding, logical reasoning, and structured writing. It will help them to emphasize novel ideas into a meaningful and quality research paper for the chosen area of study in consultation with the allotted guide. The course will help to illustrate the research with a comprehensive literature review through a methodological framework of investigation based on identified research questions, interpretation, gap-identification, data collection, comparison, analysis, evaluation, conclusion, and recommendation by selecting appropriate analytical tools (AHP, SPSS etc.) and techniques (qualitative and quantitative – regression, statistical etc.) and to develop an evidence based research paper as per reputed journals.

#### COURSE CONTENT

**Module-1:** Define the dissertation topic by developing a systematic enquiry and identifying relevant literature and case examples. Identifying the research gap, formulating the research questions and writing the aim and objectives.

**Module-2:** Establish the scope of the work, limitations and formulating a research design - methodology and identifying the parameters for the study.



**Module-3:** Elaborate the research investigation, choose appropriate analytical technique/s, analysis of the data collected (primary and secondary) from various literature sources and onsite studies

**Module-4:** Synthesize the data and arrive at conclusions and recommendations.

**Module-5:** Develop a research paper.

## COURSE OUTCOME

**CO1: Demonstrate** the research through a systematic enquiry into a chosen topic, with the help of appropriate methodology for literature review, data collection, and analysis.

**CO2: Develop** the various facts and scope of research in architecture and/or allied courses.

**CO3: Analyse** the collected data with appropriate analytical techniques.

**CO4: Justify** a stand or decision, based on the analysis with findings and results.

**CO5: Develop** an original research paper.

## REFERENCES

1. Anderson, J. and Poole, M. (1998). Thesis and assignment writing. Brisbane: John Wiley.
2. Fink, A. (1998). Conducting research literature reviews: from paper to the Internet. Thousand Oaks: Sage.
3. Groat, L. and Wang, D. (2002). Architectural Research Methods. John Wiley & Sons.
4. Gray, C. and Malins, J. (2004). Visualizing Research: A Guide to the Research Process in Art and Design. England: Ashgate Publishing Limited.
5. Murray, R. (2005). Writing for academic journals. Berkshire: Maidenhead, Open University Press.
6. Borden, I. and Ray, K. R. (2006). The dissertation: an architecture student's handbook. 2nd Ed. Oxford: Architectural Press.
7. Asad, M. A. and Musa, M. (2007). Architectural Criticism and Journalism: Global Perspectives. Umberto Allemandi.

**COURSE TITLE: PROJECT MANAGEMENT**

**COURSE CODE: ARC 4005**

**COURSE CREDIT: 3**

## COURSE INTENT

The course aims to enhance professional abilities in construction project management to navigate the complexities of the field while ensuring project success while contributing positively to both



organizational and societal objectives. It introduces project management principles, life cycle stages of a construction project, project constraints, co-ordination of various teams involved in the project including their roles and responsibilities, work break-down structure (WBS), methods of scheduling, preparation of project schedule and project feasibility analysis. Students shall gain proficiency in using tools and techniques of project management while understanding and prioritizing critical aspects such as scope, time, cost, and quality.

## COURSE CONTENT

**Module-1: Introduction to project management** – Knowledge Areas of project management, types of construction projects, planning, scheduling, controlling, and monitoring stages of projects - life cycle. Stages of a construction project, project constraints, co-ordination of various teams involved in the project and their roles and responsibilities,

**Module-2: Introduction and application of Work Breakdown structure** - Definition of work break-down structure (WBS), WBS creation for various projects related to construction and integration with respect to methods of scheduling, preparation of project schedules, project feasibility analysis, Project management through network, objectives of network techniques, terms, and definitions. Interrelationship of events and activities, dummy activities, types of networks – Activity on Node (AON) and Activity on Arrow (AOA), rules of drawing a network, Fulkerson's rule for numbering the events, development of network for construction projects, illustrative examples.

**Module-3: Project management techniques; Program Evaluation & Review Technique & CPM** - Terms and definition - time estimates, earliest expected time and latest allowable occurrence time, slack, critical path, probability of completion time for project. Critical Path Method: Terms and definition, Activity times - earliest event time, latest event time, float, critical path, illustrative examples.

**Module-4: Precedence network Diagrams (P&D)** - Precedence network diagrams for construction projects – representation of nodes in AON networks, logic of precedence network, forward pass and backward pass calculations, illustrative examples

**Module-5: Project cost analysis** – Indirect project cost and direct project cost, optimization of cost through network contraction, brief understanding of time, cost, and resource optimization; resource smoothing and levelling, project updating, illustrative examples. Application of project management techniques for construction project and use of project management software for planning, scheduling, monitoring and controlling projects.



**CO1: Demonstrate** knowledge and understanding of project management principles.

**CO2: Illustrate** project management principles and techniques in planning, scheduling, monitoring and controlling of projects.

**CO3: Choose** project management tools and techniques for efficient delivery of projects.

**CO4: Identify** precedence network technique for various phases of construction projects.

**CO5: Plan** the time and cost management while maintaining project scope and quality.

## REFERENCES

1. Blau, E., & Rupnik, I. (2007). Project Zagreb: Transition as Condition, Strategy. Practice, 142-151.
2. Burke, R. (2013). Project management: planning and control techniques. John Wiley & Sons.
3. Chitkara K. K. (1991). Construction Project Management, Tata-McGraw Hill Publication co. Ltd. Publication.
4. Choudhury S. (1992), Project management, Tata McGraw Hill, Delhi.

**COURSE TITLE: URBAN DESIGN THEORY**

**COURSE CODE: ARC 4007**

**COURSE CREDIT: 3**

## COURSE INTENT

The course intends to broaden the discourse on relating architectural design to an urban context and introduction to the discipline of urban design, its scope, objectives, concepts, methods, techniques and functions. The course will discuss the various layers of urban design – socio-cultural, morphological, temporal, and perceptual and will also analyse people centric design and activities in built environments along with sustainable and best practices in case studies that exist or are proposed for contemporary environments.

## COURSE CONTENT

**Module-1: Introduction to urban design** - Terminologies; Urban Design as Multidisciplinary field; Necessity & benefits of quality urban design; Scope, strategies, levels, legislation & scale of Urban Design; Stake holders & their role in the process of Urban Design.

**Module-2: Application of Urban Design principles** - Examples of good urban design; Urban design in history, aspects of heritage and historical continuity; Applications of urban design principles in existing developments as well as in news proposals; Theories & protocols of Urban Design - New Urbanism;



Case studies of modern & contemporary urban interventions.

**Module-3: Analysis of an Urban Area** - Urban morphology & urban character; Built & Unbuilt spaces; urban voids, public spaces, streets, transport and movement pattern; pedestrianization & street scape; services; safety and defensible spaces. Nature and urban design - open spaces, interpreting figure ground drawings and maps; relating nature to built environment & urban design.

**Module-4: People's Perception** - Users and activities in a city and its analysis; Behavioural studies and user needs; Socio-cultural and socio-economic aspects; Different zones and activities in an urban area, Activity Mapping; Memory and mental mapping, the Five Elements in a city; People-centric design and public participation, Survey techniques, Evolution analysis.

**Module-5: Urban Design** - Townscape analysis; Perceptual structure; Permeability study (privacy & accessibility) & visual analysis. Identifying and formulating constraints & possibilities; design and articulation of urban spaces, Urban Design Practices and role of Urban Design.

#### COURSE OUTCOME

**CO1: Define** urban design as a discipline, its function, scope, and objectives in shaping the cities.

**CO2: Explain** the morphological development of various typologies of urban areas.

**CO3: Interpret** various methods and techniques for analysing Urban areas.

**CO4: Utilise** people-centric aspects and design approaches in an urban area.

**CO5: Choose** the case studies and urban design interventions for best practices in sustainable design.

#### REFERENCES

1. Spreiregen, Paul D. (Paul David). (1965). Urban design: the architecture of towns and cities, written and illustrated by Paul D. Spreiregen. New York, : McGraw-Hill
2. Lang, Jon T. (2017). Urban Design: A Typology of Procedures and Products: Illustrated with over 50 Case Studies. Second edition. New York: Routledge.
3. Gehl, Jan (1987) Life Between Buildings: Using Public Space.
4. Lynch, Kevin (1960) Image of the City: The MIT Press.



## PROFESSIONAL ELECTIVES\*

**COURSE TITLE: CREATIVE PHOTOGRAPHY**

**COURSE CODE: ARC 4009**

**COURSE CREDIT: 2**

### COURSE INTENT

This course imparts to enhance student's visual senses through creative photography and also to understand the basic principles and composition in photography.

### COURSE CONTENT

**Module 1: Introduction to Photography:** Fundamental Concepts, Understanding the basic principles and concepts that form the foundation of photography. Understanding the various purposes and applications of photography in different contexts.

**Module 2: Study of Light & Exposure:** Understanding the importance of light in photography. Introduction to natural and artificial light sources, Hands-on practice by experimenting with different lighting conditions and exposure settings

**Module 3: Exploring Types of Photography:** It offers a comprehensive overview of various photography genres, including portrait, landscape, documentary, street, macro, and wildlife photography. Through discussions and practical demonstrations, participants gain insights into each genre's unique characteristics, techniques, and artistic considerations. Also, it encourages experimentation and skill development in different areas of interest within the realm of photography.

**Module 4: Conceptual Photography:** Conceptual photography goes beyond depicting the physical world, aiming to convey abstract ideas, emotions, or narratives through visual imagery. It utilizes symbolism, metaphor, and storytelling techniques to engage viewers on a deeper level, prompting reflection and interpretation of underlying concepts. This genre challenges viewers to look beyond the surface and contemplate the deeper meaning behind the images, making it a powerful medium for artistic expression and communication.

**Module 5: Comprehensive Exploration and Post-Production:** Examining Various Categories  
Exploration of photography across different categories, including topics, locations, objects, patterns,



and cultural settings. Gaining a comprehensive viewpoint on the intricate and diverse aspects of photography. Post-Production Approaches- Extensive exploration of post-production techniques to refine and enhance photographs. Development of participants' proficiency in using editing tools to bring their creative vision to life.

### COURSE OUTCOME

**CO1: Show** fundamental photography principles: composition rules, exposure settings, and lighting techniques

**CO2: Identify** the importance of Light & shade & Exposure in Photography.

**CO3: Analyse** photography skills, principles and light techniques in different thematic photography.

**CO4: Evaluate** photographic compositions, concepts, elements, symbols, metaphor for the artistic expression.

**CO5: Create** a unique body of work by integrating diverse elements into themed photographic narratives.

### REFERENCES

1. Eastwood, G., & Meehan, J. (2012). Photographing the Elements: Capturing Nature's Most Extreme Phenomena with Your Digital Camera. Ilex Press.
2. Book: Davis, H. (2022). Composition & Photography: Working with Photography Using Design Concepts. Rocky Nook.
3. Book: Molnar, D. (2022). Learning to See: A Photographer's Guide from Zero to Your First Paid Gigs. Harper Horizon.

**COURSE TITLE: ARCHITECTURAL JOURNALISM**

**COURSE CODE: ARC 4011**

**COURSE CREDIT: 2**

### COURSE INTENT

The course intends to provide an opportunity for understanding and expressing various issues concerning architecture, design and built environment.

### COURSE CONTENT

**Module 1: Foundations of Architectural Discourse** - Introduction to Architectural Discourse  
Understanding the significance of discourse in architecture, design, and the built environment. Exploring



the historical context and evolution of architectural discourse. Critical Thinking in Design Studies Emphasizing the role of critical thinking in the field of design. Connecting critical thinking to essential decision-making in architectural practice.

**Module 2: Reading Architectural Contexts - Methods of Inquiry in Architecture** Introducing various methods of inquiry used in architectural research. Developing skills in analysing and interpreting architectural contexts. Exploration of Concerns and Opportunities Encouraging learners to identify concerns and opportunities within the architectural and built environment. Reading and critically evaluating existing architectural narratives.

**Module 3: Developing Design Narratives Crafting Design Narratives** - Teaching the art of developing narratives in design arguments. Providing tools and techniques for effective communication of design ideas. Perceived Arguments in Design Understanding the role of perceived arguments in architectural discourse. Exploring how design decisions are communicated and perceived.

**Module 4: Essential Decision-Making in Architecture** - Decision-Making Processes Examining essential decision-making processes in architecture. Case studies illustrating the impact of decisions on the built environment. Encouraging Learners in Decision-Making Providing scenarios for learners to make critical decisions in design studies. Fostering a sense of responsibility in architectural decision-making.

**Module 5: Presenting Architectural Arguments** - Art of Effective Presentation Developing skills in presenting architectural arguments. Exploring various mediums for presenting design concepts and narratives. Reflective Practices in Architectural Discourse Encouraging reflective practices to refine architectural arguments. Creating a platform for peer review and constructive critique in the presentation of architectural ideas.

## COURSE OUTCOME

- CO1: Demonstrate** various integral aspects of journalism.
- CO2: Identify** the purpose and significance of journalism in architecture.
- CO3: Discover** a method and develop techniques of different kinds of narratives.
- CO4: Determine** the publishing process involved in architectural journalism.
- CO5: Construct** the importance of emerging media and the role of ethics.

## REFERENCES

1. Johnson, Paul-Alan. (1994) The Theory of Architecture. Concepts, Themes and Practices. John Wiley & Sons. Inc.



2. Wiseman, Carter. (2014) Writing Architecture: A Practical Guide to Clear Communication about the Built Environment.
3. Ada Louise Huxtable. (2010) On Architecture: Collected Reflections on a Century of Change.
4. Hearn, Fil. (2003) Ideas that shaped buildings. The MIT Press.
5. Frampton, Kenneth. (2016) Modern Architecture – A Critical History. Thames & Hudson.

**COURSE TITLE: VASTUVIDYA**

**COURSE CODE: ARC 4013**

**COURSE CREDIT: 2**

### **COURSE INTENT**

This course imparts theoretical knowledge and practical skills, emphasizing the application of Vaastu principles in modern Architectural, Design, and Planning contexts, aligning with contemporary science and technology.

### **COURSE CONTENT**

**Module 1: Introduction to Vastuvidya** - Understanding the ancient and scientific roots of Vastuvidya, its concept, evolutionary nature, and relevance in planning, designing, architecture and construction.

**Module 2: Fundamental Principles of Vastu** - Basic unit of measurements – purushapramanam, hastham, padmam, angulam & yavam; vertical proportioning & Thalam concept; basic geometry; Vastupurusha Mandala; five elements (Panchabhutas), cardinal and intercardinal directions (Dikpalas), and their impact on design.

**Module 3: Integration of Vastu in Planning, and Architectural design** - Exploring the implementation of Vastu in town planning and traditional architecture in India and understanding its planning, designing & construction aspects. Case studies. Planning, design & construction of temples, halls, residential buildings, street patterns, planned settlements etc.

**Module 4: Technology in Vastuvidya** - Classification of materials, brief description of the characteristics & uses of sila, istaka, daru, loha, mrilsna, sudha; Assembly & joinery; Construction methods - Foundations. Walls, columns, utharam & roof structure, the system of proportional measurements & thumb rules; investigation of Land; tests for suitability.

**Module 5: Consultation in Vastuvidya** - Roles & duties of Silpis and Vastukar; hands-on exercises for



identifying common vastu doshas (imbalances) in existing structures and applying corrections to enhance positive energy flow; tailoring Vastu recommendations to create personalized and harmonious living and working spaces.

### COURSE OUTCOME

- CO1: Explain** traditional architecture in India with respect to context-relevance and Vastushastra.
- CO2: Outline** the basics of Vastuvidya and the science behind it.
- CO3: Illustrate** the technological and social aspects of Vastuvidya towards modern design regulations.
- CO4: Make use of** Vastuvidya in planning and design of towns and building construction.
- CO5: Apply** the Vastuvidya concepts for planning at urban and residential scales.

### REFERENCES

1. Prabhu, B.T.S. & Achyuthan, A. (1997). Design in Vastuvidya. Vastuvidyapratisthanam.
2. Choudhury, V. (1998). Indian architectural theory: Contemporary uses of VastuVidya. Routledge.
3. Raman, V.V. (2000). Principles and practice of Vastu Shastra. Vidya Bhawan.
4. Babu, B.N. (2000). Handbook of Vastu. UBS Publishers Distributors.
5. Borden, M. (2011). Vastu Architecture: Design Theory and Application for Everyday Life. CreateSpace Independent Publications.
6. Bharadwaj, A. (2013). Scientific approach to Vaastu-shastra. Abhinav Publications.

**COURSE TITLE: CULTURAL STUDIES**

**COURSE CODE: ARC 4015**

**COURSE CREDIT: 2**

### COURSE INTENT

This course imparts fundamental insights into culture and its impact on architecture, emphasizing cultural beliefs' influence on the built environment. Students learn to appreciate diverse Traditional Knowledge Systems, comprehend architecture as a reflection of cultural values, and analyse cultural influences on architectural design, fostering sensitivity in design principles.

### COURSE CONTENT

**Module 1: Introduction to Cultural Studies** - Investigating culture studies examining its definition, components, and significance. Defining cultural studies involves understanding its scope, importance, and interdisciplinary nature, particularly concerning architecture.



**Module 2: Society and Culture** - Studying the symbiotic relationship between culture and society reveals their mutual influence. How cultural norms shape social institutions like family, religion, education, economy, and politics.

**Module 3: Approaches to Cultural studies** - Various approaches to cultural studies, including anthropological, sociological, and semiotic perspectives, contribute to a comprehensive exploration of this field.

**Module 4: Culture and Built Environment** - Investigating how cultural beliefs influence architectural principles involves exploring connections between cosmological models, architectural forms, and cultural beliefs. Examine the role of geo-cultural regions towards shaping the built environment and interactions between nature and culture, leading to diverse Traditional Knowledge System through examples.

**Module 5: Cultural relevance in Architecture** - Recognizing cultural sensitivity's significance in architecture, fostering diversity, and raising awareness in design.

## COURSE OUTCOME

**CO1: Outline** the understanding of culture and its key elements.

**CO2: Explain** symbiotic relationship between culture and society.

**CO3: Classify** the various approaches to cultural studies.

**CO4: Identify** the impact of cultural beliefs on the built environment

**CO5: Make use of** cultural influences on the built environment through architectural design.

## REFERENCES

1. Mcadams, M. A., Cantu, J. T., & Vassoler-froelich, I. (2012). *The Geography, Politics, and Architecture of Cities: Studies in the Creation and Complexification of Culture*. N.Y, Lewiston: Edwin Mellen Press.
2. Rapoport, A. (1969). *House Form & Culture*. Prentice Hall.
3. Roth, L. M., & Clark, A. C. R. (2018). *Understanding Architecture: Its Elements, History, and Meaning*. Routledge.
4. Vellinga, M., & Asquith, L. (2005). *Vernacular Architecture in the Twenty-First Century*. Taylor & Francis.



**COURSE TITLE: INTERIOR ILLUMINATION**

**COURSE CODE: ARC 4017**

**COURSE CREDIT: 2**

**COURSE INTENT**

The coursework aims towards providing students with a well-rounded education in interior illumination integration with daylighting, covering both the theoretical and practical aspects of the field, while also considering the evolving trends and technologies in lighting design.

**COURSE CONTENT**

**Module 1: Introduction to Interior Illumination** - The Importance of Interior Illumination, Lighting Terminology and Concepts, Light Sources and Technologies. Highlight Lighting Technologies: Incandescent Lighting, Fluorescent Lighting, LED Lighting, Emerging Lighting Technologies,

**Module 2: Luminaires and Fixtures** - Types of Luminaires, Fixture Design and Aesthetics, Fixture Placement and Mounting, Lighting Control Integration. Lighting Design Principles: Visual Comfort and Ergonomics, Lighting for Different Interior, Spaces, Mood and Ambiance in Lighting, Contrast, Shadow, and

**Module 3: Lighting for Specific Environments** - Residential Lighting, Commercial and Office Lighting, Hospitality and Restaurant Lighting, Healthcare and Hospital Lighting, Retail and Display Lighting. Lighting and Aesthetics: Artistic and Decorative Lighting, Creating Focal Points with Lighting, Sculptural and Architectural Lighting, Light as an Artistic Element,

**Module 4: Energy Efficiency and Sustainability** - Energy-Efficient Lighting Design, Environmental Impact and Sustainability, Lighting Certifications and Ratings, Codes and Regulations

**Module 5: Project Design and Implementation** - Design Process and Workflow, Project Planning and Budgeting.

**COURSE OUTCOME**

**CO 1: Define** the fundamentals of Lighting, Lighting Terminology and Concepts and principles.

**CO 2: List** the various techniques, technologies, and materials for the designing of lighting systems.

**CO 3: Classify** various components of lighting based on purpose and function of interior spaces.

**CO 4: Develop** the knowledge of lighting design to achieve energy efficiency and sustainability.



**CO 5: Choose** the design strategies for various lighting techniques in interior spaces.

#### REFERENCES

1. Fuller, M. (1985). Concepts and practice of Architectural Daylighting. Van Nostrand Reinhold Co.
2. Egan, D. M. (1983). Concepts in Architectural Lighting. McGraw Hill Book Company.
3. Blakemore, R. G. (2005). History of Interior Design and Furniture: From Ancient Egypt to Nineteenth-Century Europe. Wiley Publishers.
4. Alonzo, R. J. (Elsevier). Electrical Codes, Standards, Recommended Practices and Regulations.
5. Government of India. (2011). National Lighting Code.



## FOURTH YEAR/ SEMESTER EIGHT

**COURSE TITLE: ARCHITECTURAL DESIGN AND DETAILING - VIII**

**COURSE CODE: ARC 4002**

**COURSE CREDIT: 10**

### COURSE INTENT

The coursework intends to create an opportunity for the coordinated group work in conducting the study of urban context with various methods for various attributes through contextual and contemporary urban interventions in form of guidelines and design. The studio emphasises to study an urban area with a scale ranging between 20,000 – 30,000 sq.mt with an influence zone of 40,000-60,000 sq.mt. A detail study of the urban area is to be undertaken and analysis of the existing urban fabric is to be done to formulate strategies and interventions in the form of policies, leading towards design decisions. The probable projects that may be taken up for the studio but not limited to commercial/ mixed use zones, residential zones, special economic zones, transportation Zones waterfront, heritage, recreational precincts, and redevelopment projects etc.

### COURSE CONTENT

**Module-1: Understanding the City and Urban Fabric -** Spatial characteristics and attributes of the city, master plan and other regulations of the city.

**Module-2: Organize and synthesize the data collection –** Relevant data of the city/ neighbourhood through onsite visit in the form of maps, photographs, onsite drawings/sketches, various surveys etc.

**Module-3: Analysis of the data -** Different data collection and analysis mechanisms to assess the urban attributes, and suitable graphical representations (physical and digital models).

**Module-4: Design concepts -** Recommending suitable design concepts based on analysis and design program with guidelines, maps, drawings, models etc.

**Module-5: Design demonstration –** Detailing out the recommendations of the urban intervention through suitable graphical representations, maps, physical and digital models etc.

### COURSE OUTCOME

**CO1: Interpret** the city in terms of its spatial characteristics.



**CO2: Organize** the data collected from city/ neighbourhood visit in the form of maps, photographs, onsite drawings/sketches, various surveys etc.

**CO3: Analyse** the data through various mechanisms and with suitable graphical representations for developing the design program.

**CO4: Recommend** suitable design concepts based the design program.

**CO5: Formulate** the details and recommendations of the urban intervention.

## REFERENCES

1. Time Saver Standards for Urban Design. (2012). Tata-McGraw Hill
2. Jacobs, Jane. (1992). The Death and Life of Great American Cities. Vintage Books ed. New York: Vintage Books.
3. Whyte, William H. (1980) The Social Life of Small Urban Spaces (Washington DC: Conservation Foundation).

**COURSE TITLE: INTERIOR DESIGN AND DETAILING**

**COURSE CODE: ARC 4004**

**COURSE CREDIT: 7**

## COURSE INTENT

The course aims to provide a comprehensive understanding of interior design, encompassing historical context, behavioural science, and environmental psychology. It covers fundamental design components, principles, and elements to foster creativity. Additionally, it focuses on concept development, spatial organization, technical decisions, material selection, services, and design detailing across various typologies within a specified site extent. Broad Typology: Residential/ Commercial / Retails / Offices/ Institutional/ Hospitality/ Recreational/ Sports/ Healthcare/ Others. **Site extent: Ranges from 200 m<sup>2</sup>- 600 m<sup>2</sup>.**

## COURSE CONTENT

**Module-1: Introduction to interior design** - History, styles; Behavioural Science: Nature & role of social, physical & built environment; Environmental psychology: behaviour, psychology, perceptions, preferences, etc.; Basic components- Functionality, Services, Inclusive Design; Basic elements of design for evolution of creativity - dot, line, plane, volume 2D & 3D. Basic principles of design - Axis, symmetry, balance, focus, rhythm, harmony, unity, variety, contrast, hierarchy, scale & proportion, movement, emphasis, dominance, fluidity, articulation & order.



**Module 2: Concept & theme Development** - Enclosures & envelopes to formulate the volumes, response to functional spaces; Functionality: Spatial Organization & Planning; Derivation of quantitative aspect of spaces based on User-Activity Analysis, furniture / equipment, Anthropometry, Ergonomics, Layout, Circulation, etc.; qualitative aspects based on ambience.

**Module-3: Technical decisions** - Constructional details & Material specification- Exploration & selection responding to functionality & aesthetics; Decisions for aesthetics: Colour, textures, patterns, surface finishes, ornamentation, furnishings, accessories, interior Landscaping, etc. with reference to visual comfort & ambience in the interiors.

**Module-4: Integration of Services** - Mechanical & Environmental System: HVAC, electrical, firefighting, sanitary & plumbing, security, telecommunications, lifts, escalators, lighting & acoustical systems etc. responding to functionality & aesthetics.

**Module 5: Design & Detailing** - Design detailing in interior project portfolio: Spatial organization, material selection, and technical specifications to ensure functional efficiency and aesthetic coherence. Construction details, material specifications, and service systems such as HVAC, lighting, and acoustics addressing visual comfort and ambience, tailored to specific project requirements.

## COURSE OUTCOME

**CO1: Explain** the basic elements and components of interior design.

**CO2: Organize** the data collected about the project outlining the project requirements and through literature and case studies.

**CO3: Analyse** the data towards developing the design program of the project undertaken.

**CO4: Justify** suitable design concepts based the design program.

**CO5: Compile** the final design proposal in the form of portfolio and models with necessary detailing.

## REFERENCES

1. DeChiara, J., Panero, J., & Zelnik, M. (2018). Time-Saver Standards for Interior Design and Space Planning. Publisher.
2. Ching, F. D. K., & Binggeli, C. (2020). Interior Design Illustrated. Publisher.
3. Grimley, C., & Love, M. (2018). The Interior Design Reference & Specification Book: Everything Interior Designers Need to Know Every Day. Publisher.
4. Tangaz, T. (2021). Interior Design Course: Principles, Practices, and Techniques for the Aspiring Designer. Publisher.



**COURSE TITLE: SETTLEMENT STUDIES**

**COURSE CODE: ARC 4006**

**COURSE CREDIT: 3**

**COURSE INTENT**

The coursework intends to explore the definition and formation of settlements, their types and classification of settlements, the approaches to study and analyse settlements. This course will provide students with the knowledge on evolution of human settlements, settlement patterns and basic services, and impacts of various factors on planning approaches. It will also provide students with a brief knowledge of settlement planning, survey and analysis tools, legislation, development control regulations, government & non-governmental organizations, and schemes and programs in India.

**COURSE CONTENT**

**Module-1: Types and patterns of settlements** - The different types of settlements from different eras (Ancient, Medieval and Contemporary) their pattern and evolution. Various theories and concepts of Settlement design

**Module-2: Study of Metropolitan development** – problems of major agglomerations, studies in conjunction with the theories of major cities, Dynapolis and Megalopolis, special problems of the central area; migration and suburban development; emerging social and economic characteristics of the central city and the suburbs; impact on government systems and public services.

**Module-3: Urban Issues** - Changing urbanity between a city and a metropolis. Anatomy, growth and trends of metropolitan development, components of metropolitan plan; economics, transportation, disaster mitigation, etc. in evolving metropolitan framework; hierarchy of urban centers and their functional linkages.

**Module-4: Survey and analysis methods** - Survey and analysis methods, Tools – Survey and data collection techniques; Evolution analysis; infrastructure analysis; accessibility and visual analysis.

**Module-5: Governance** – Government, institutional set-up & non-governmental agencies, Schemes- PPP & SRA, approach to development, urban redevelopment and renewal – goals, objectives, costs and benefits.

**COURSE OUTCOME**



**CO1: Explain** the different types of settlements from different eras, their pattern and evolution

**CO2: Outline** the application of various approaches and concepts of urban planning and development

**CO3: Build** the skill of data collection through survey and analyses methods.

**CO 4: Utilise** the importance of urban economics as a development tool.

**CO 5: Identify** the governance and institutional set-up for implementation of strategies and policies.

## REFERENCES

1. Doxiadis, C. A. (1970b). Ekistics, the Science of Human Settlements. *Science*, 170(3956), 393–404.
2. Hiraskar, G. K. (1992). *Fundamentals of Town Planning*.
3. Rangwala. S.C, (1989) "Town Planning", Charotar Publishing House.

**COURSE TITLE: PROFESSIONAL PRACTICE AND ETHICS**

**COURSE CODE: ARC 4008**

**COURSE CREDIT: 3**

## COURSE INTENT

This course aims to instil a thorough understanding of professional practice in architecture, covering key concepts, legal aspects, interdisciplinary collaboration, effective practice and management and valuation.

## COURSE CONTENT

**Module-1: Introduction to Professional Practice** - Architect's Act 1972; Architectural Profession, Code of Conduct & Ethics, Acts & Legislation, Duties & Liabilities, Role & Responsibility, Nature of Profession, Regulatory bodies, Professional bodies.

**Module 2: Architectural Competitions** - Classification, benefits & drawbacks, methods, rules & regulations, Appointments & Duties of Assessors & Adviser. Withdrawal of Competition. Architectural Copyrights: meaning, importance & precautions.

**Module-3: Arbitration & Conciliation** - Arbitration & Conciliation Act 1996; Nature, Appointment, Conduct, Powers & duties; Procedure & awards.

**Module-4: Practice & Management** - Types, Office set-up & administration and HR management, Registration, Practice Procedure; Expansions, Collaborations, Global practice. CoA's Conditions of Engagement & Scale of Charges. Financial management aspects of the architectural profession through



case-based learnings.

**Module-5: Valuation** - Introduction to Valuation and its importance, essential characteristics, classifications. Methods of valuation, valuation report.

### COURSE OUTCOME

**CO1: Explain** the fundamental concepts and terminology in architectural practice and understanding the roles of professional and statutory bodies.

**CO2: Interpret** the understanding on various architectural competitions.

**CO3: Outline** the knowledge of legal dimensions of architectural practice, specifically in relation Arbitration & Conciliation.

**CO4: Develop** a comprehensive understanding of the office management aspects of the architectural profession through case-based learnings.

**CO5: Make use of** the concept and methods of valuation.

### REFERENCES

1. Deobhakta, M. (1997). Architectural Practice in India. Super Book House, Mumbai.
2. Namavati, R. H. (2016). Professional practice: with elements of estimating, valuation, contract and arbitration. Lakhani Book Depot.
3. Demkin, J. A. (2001). The architect's handbook of professional practice. John Wiley & Sons.
4. Hyde, R. (2012). Future practice: Conversations from the edge of architecture. Routledge.
5. Emmitt, S., Prins, M., & Den Otter, A. (2009). Architectural Management: International research and practice. John Wiley & Sons.



## FIFTH YEAR/ SEMESTER NINE

**COURSE TITLE: PRACTICAL TRAINING**

**COURSE CODE: ARC 5001**

**COURSE CREDIT: 16**

### COURSE INTENT

The intent of the course is to expose the student to various facets of an architect's firm. During the internship, the student is expected to learn under the supervision of an architect, engage in the tasks assigned, gain exposure about the functioning of the firm, imbibe professional commitment and ethics.

### COURSE CONTENT

The student is expected to orient under an architect during his/her internship in an architect's office that would include: the process of development of conceptual ideas, presentation skills, involvement in office discussions, client meetings, development of the concepts into working drawings, tendering procedure, site supervision during execution and coordination with the agencies involved in the construction process and to facilitate the understanding of the evolution of an architectural project from design to execution.

### COURSE OUTCOME

**CO1: Outline** the organizational structure, ethics and aspects of team-work to coordinate and execute various tasks assigned in an architect's office.

**CO2: Demonstrate** the role of an intern and documentation of the records related to the internship.

**CO3: Make use of** the various processes of design, recommend best practices and decision making through various tools for effective communication.

**CO4: Appraise** the project in a systematic method from its conception to post design stage.

**CO5: Develop** solutions for a given context and represent the architectural knowledge gained from the internship experience in the form of a Portfolio.

### REFERENCES

1. MSAP Training Manual.
2. COA Minimum Standards of Architectural Education Regulations 2020.



## FIFTH YEAR/ SEMESTER TEN

**COURSE TITLE: ARCHITECTURAL DESIGN THESIS**

**COURSE CODE: ARC 5002**

**COURSE CREDIT: 16**

### COURSE INTENT

The course intends the student towards undertaking the task of independently managing and presenting all facets of architectural design, starting from its inception through a Thesis project. They will be guided through researching project requirements, drafting project briefs, exploring various conceptual approaches, and critically assessing them. The final outcome of the project shall include all the drawings and detailing related to their projects undertaken.

### COURSE CONTENT

The student is expected to study and demonstrate the project based on their inclinations. They shall be illustrating the proposal for the selected architectural design problem in consultation with the allotted guide. They shall communicate and represent the proposed design solutions systematically at different stages in the form of sketches, conceptual drawings, design drawings, technical drawings, models & reports.

### COURSE OUTCOME

**CO1: Outline** the thesis topic in domains of the student interest.

**CO2: Demonstrate** the understanding through background study, literature study and analysis of case studies findings establishing the feasibility related to the topic.

**CO3: Examine** the proposal with the detailed design program detail including the standards, spatial requirements and other related norms and guidelines.

**CO4: Appraise** design proposal with form development, development of spaces, aesthetics, services, Landscape, sustainability, barrier-free and other related detailing etc.

**CO5: Design** and detailing the built form and communicate through a comprehensive design portfolio with detail drawings, physical models etc.

### REFERENCES

All references will be specific to the project and will cover a wide range of topics (history, theory, services, materials, and construction) from architecture and related fields, as well as critical papers, essays, recorded studies, and books.



- COA Thesis repository.
- RIBA Thesis repository.
- CCF repository for Thesis awards.
- CEPT Graduate Thesis repository.



## ADVANCED ELECTIVES: TOWARDS MINOR SPECIALISATION

**COURSE TITLE: INTERIOR DESIGN (ADVANCE ELECTIVE - I)**

**COURSE CODE: ARC 4019**

**COURSE CREDIT: 3**

### COURSE INTENT

This course aims to delve into the fundamentals of interior design, emphasizing both aesthetic and functional aspects. Through exploration of design principles, historical evolution of furniture, materials, and ergonomics, students gain skills to analyze color schemes, lighting, and accessory roles, preparing them for versatile design applications.

### COURSE CONTENT

**Module 1: Introduction to Interior Design Principles and Concepts:** Understanding the aesthetic and functional aspects of interior design, Introduction to basic design principles such as balance, proportion, and harmony and basic concepts of interior design including spatial and visual quality, Exploring design fundamentals and ergonomics with existing day-to-day furniture.

**Module 2: History and Evolution of Furniture Design:** Identifying the evolution of furniture design through historical developments, learning about key movements, styles, and influential designers in furniture history, Analyzing the impact of cultural, social, and technological factors on furniture design, understanding how historical trends influence contemporary design practices.

**Module 3: Color Schemes and Lighting Designs in Interiors:** Analyzing color schemes and their effects on interior spaces, exploring various lighting designs and their impact on spatial perception, Understanding the role of lighting in creating ambiance.

**Module 4: Materials and Their Application in Interior Design:** Identifying different materials commonly used in interior design and furniture making, Understanding the characteristics and properties of materials, Exploring the application of materials in interior spaces, Examining sustainability and environmental considerations in material selection.

**Module 5: Role of Accessories in Interior Design:** Assessing the role of accessories in enhancing interior aesthetics and functionality, exploring different types of accessories and their placement in interior spaces Understanding how accessories contribute to the overall design scheme.



**CO1: Explain** the aesthetic and functional aspects of interior design.

**CO2: Illustrate** human factors in interior design, including anthropometry and ergonomics existing day to day furniture.

**CO3: Outline** color schemes and lighting designs in interiors.

**CO4: Choose** the materials and its application in interior and furniture design.

**CO5: Identify** the role of accessories in Interiors.

## REFERENCES

1. Ching, Francis D. K., and Corky Binggeli. Interior Design Illustrated. 6th ed., John Wiley and Sons, Inc., 2018.
2. Binggeli, Corky. Materials for Interior Environments. 2016.
3. Nussbaumer, Linda L. Human Factors in the Built Environment. Bloomsbury Academic, 2014.
4. Robbie. G. Blakemore, (2005) History of Interior Design and Furniture: From Ancient Egypt to Nineteenth-Century Europe, Wiley publishers.
5. Jim Postell, (2007) Furniture Design, Wiley publishers.
6. Edward Lucie-Smith (1985) Furniture: A Concise History (World of Art), Thames and Hudson.

**COURSE TITLE: INTERIOR DESIGN (ADVANCE ELECTIVE - II)**

**COURSE CODE: ARC 4012**

**COURSE CREDIT: 3**

## COURSE INTENT

This course aims to deepen understanding in interior design by exploring psychological aspects such as spatial perception, kinesthetics, and group behavior. Emphasizing sustainability and technological integration, it seeks to equip students with holistic design approaches for creating aesthetically pleasing, functional, and socially responsible interior environments.

## COURSE CONTENT

**Module 1: Introduction to Spatial Perception:** Basics of how individuals perceive and interpret space. Associative Aspects of Space: Exploring the role of associations, memories, and emotions in spatial perception. Cognitive Theories in Space Making: Overview of key cognitive theories influencing spatial design and place making.



**Module 2: Kinesthetic Understanding and Movement Kinesthetic Perception:** Understanding how movement influences spatial perception. **Dynamic Space Organization:** Principles of designing spaces that accommodate and enhance movement.

**Module 3: Dynamics and Human Behavior in Groups:** Analyzing behaviors and interactions within group settings. **Activities and Grouping:** Examining how activities influence the grouping of people in spatial contexts.

**Module 4: Privacy, Territoriality, and Defensible Space Privacy in Design:** Balancing openness and privacy in spatial layouts. **Territoriality and Defensible Space:** Strategies for creating spaces that feel secure and personalized

**Module 5: Behavioral Patterns in Space Planning and Service:** Integration of Observational Studies and Behavioral Patterns: Techniques for observing and interpreting human behavior in designed spaces. **Integration of Services in Interiors:** Understanding how to seamlessly incorporate services into interior design.

## COURSE OUTCOME

**CO1: Illustrate** the associative aspects of interior spaces.

**CO2: Explain** the quality of spaces required for user feel and experience.

**CO3: Outline** the reasons for responses of human behavior in different spaces.

**CO4: Identify** the impact of design choices on the environment and the well-being of occupants.

**CO5: Make use of** the integration of smart technologies, digital interfaces, and automation in interior design.

## REFERENCES

1. Ching, Francis D. K., and Corky Binggeli. *Interior Design Illustrated*. 6th ed., John Wiley and Sons, Inc., 2018.
2. Binggeli, Corky. *Materials for Interior Environments*. 2016.
3. Nussbaumer, Linda L. *Human Factors in the Built Environment*. Bloomsbury Academic, 2014.
4. Mark, Karla, and Rob Fisher. *Space Planning Basics*. 4th ed., Wiley Publisher, 2016. ISBN-10: 9781118882009.
5. Edward Lucie-Smith (1985) *Furniture: A Concise History (World of Art)*, Thames and Hudson.



**COURSE TITLE: INTERIOR DESIGN (ADVANCE ELECTIVE - III)**

**COURSE CODE: ARC 5004**

**COURSE CREDIT: 6**

### **COURSE INTENT**

This course aims to empower students in interior design by offering a focused exploration into Hospitality, Health Facility, Office/Corporate, or Residential Interiors. With a practical approach, students will learn to analyze human activities, perceptions, and space interpretations, honing skills in schematic and detailed drawings, specification writing, and contract document preparation. The emphasis is on integrating design principles with industry standards, considering user behavior, and creating holistic concepts for well-designed, functional spaces.

### **COURSE CONTENT**

#### **Module 1: Introduction to Interior Design Specializations Overview of Interior Design**

**Specializations:** Introduction to Hospitality, Health Facility, Office/Corporate, and Residential Interiors. Industry Standards and Regulations. Understanding the specific regulations and standards for each interior design specialization. Modular approach to furniture design.

**Module 2: Human Activities and Space Interpretations Analysis of Human Activities:** In-depth study of activities specific to hospitality, health facilities, offices, and residential spaces. Space Interpretations: Understanding how users interpret and engage with space in different contexts.

**Module 3: Design Principles and Industry Integration of Design Principles:** Applying design principles to specific interior settings. Industry Standards and Best Practices: Overview of industry-specific best practices and standards in hospitality, health, office, and residential design.

**Module 4 Holistic Design Concepts and Integration User Behavior Studies:** In-depth studies on user behavior in hospitality, health, office, and residential environments. Thematic Design Concepts: Creating cohesive thematic designs that integrate individual spaces within each specialization.

**Module 5: Practical Skills and Document Preparation Schematic and Detailed Drawings:** Developing skills in creating schematic and detailed drawings for each specialization. Specification Writing and Contracts: Practical training in writing specifications and preparing contract documents for different interior projects.



- CO 1: Explain** the aesthetic and functional aspects of interior design.
- CO 2: Identify** human activity, perceptions and interpretations of space.
- CO 3: Analyze** user behavior studies and the creation of holistic design concepts.
- CO 4: Appraise** space planning with volumetric and ergonomics study for integration.
- CO 5: Design** integrating individual spaces into cohesive thematic designs for diverse interior settings.

#### REFERENCES

1. Ching, Francis D. K., and Corky Binggeli. Interior Design Illustrated. 6th ed., John Wiley and Sons, Inc., 2018.
2. Binggeli, Corky. Materials for Interior Environments. 2016.
3. Nussbaumer, Linda L. Human Factors in the Built Environment. Bloomsbury Academic, 2014.
4. Mark, Karla, and Rob Fisher. Space Planning Basics. 4th ed., Wiley Publisher, 2016. ISBN-10: 9781118882009.
5. Edward Lucie-Smith (1985) Furniture: A Concise History (World of Art), Thames and Hudson.

**COURSE TITLE: LANDSCAPE DESIGN (ADVANCE ELECTIVE - I)**

**COURSE CODE: ARC 4021**

**COURSE CREDIT: 3**

#### COURSE INTENT

The course aims to provide students with a comprehensive understanding of landscape architecture by exploring its historical background, design principles, theoretical frameworks, and practical applications.

#### COURSE CONTENT

**Module 1: Historical Background and Design Principles:** Overview of landscape architecture history, Renaissance landscapes, Baroque landscapes: design characteristics and influences, 18th-century English landscapes, Chinese and Japanese landscapes: design principles and cultural significance

**Module 2: Theories and Psychologies in Landscape Design:** Introduction to important theories in landscape architecture, psychological aspects of landscape design, Cultural and spiritual factors influencing landscape design, Case studies illustrating the application of theories and psychologies in



landscape design.

**Module 3: Landscape Components and Climate:** Understanding landscape components at different scales: macro, meso, and micro, Role of climate in landscape design, Adaptation strategies for different climates, Case studies highlighting the integration of climate considerations in landscape architecture projects.

**Module 4: Landscape in Urban Context:** Urban landscape design: challenges and opportunities, Greenways: design principles and benefits, Wetlands, and biodiversity parks: importance and design considerations, Improvement of urban living through landscape interventions, Case studies of successful urban landscape projects from around the world

**Module 5: Global Landscape Architects and Design Techniques:** Study and assessment of prominent landscape architects worldwide, Examination of their philosophies and design approaches, Exploration of innovative design techniques used by leading landscape architects, Analysis of case studies showcasing the work of renowned landscape architects.

## COURSE OUTCOME

- CO1: Explain** the historical influences on landscape architecture.
- CO2: Outline** design principles to create landscape compositions.
- CO3: Illustrate** the psychological and cultural factors shaping landscape design decisions.
- CO4: Identify** climate considerations into sustainable landscape designs.
- CO5: Compare** and contrast global landscape architects' philosophies and design techniques.

## REFERENCES

1. Thompson, I. H. (2014). Landscape architecture: A very short introduction. Oxford University Press.
2. Simonds, J. O., & Starke, B. (2013). Landscape architecture: A manual of environmental planning and design (5th ed.). McGraw-Hill Education.
3. McHarg, I. L. (1995). Design with nature. John Wiley & Sons.
4. Roth, L. M. (2014). Understanding architecture: Its elements, history, and meaning (3rd ed.). Routledge.
5. Pizzoni, F., & Martella, M. (1999). The garden: A history in landscape and art. Rizzoli International Publications.
6. Hopper, L. J. (Ed.). (2012). Landscape architectural graphic standards. Wiley.



**COURSE TITLE: LANDSCAPE DESIGN (ADVANCE ELECTIVE - II)**

**COURSE CODE: ARC 4014**

**COURSE CREDIT: 3**

### **COURSE INTENT**

The course aims to educate students on sustainable landscape architecture practices, emphasizing the integration of environmental considerations, such as topography and water management, with design principles.

### **COURSE CONTENT**

**Module 1: Foundations of Sustainable Landscape Architecture:** Introduction to sustainability in landscape architecture; Study of topography, slopes, and landforms for natural drainage patterns; Incorporation of lighting and MEP (Mechanical, Electrical, Plumbing) services in sustainable design

**Module 2: Sustainable Landscape Practices:** Use of indigenous plants and materials in landscape design, Water-efficient landscape techniques and strategies, Management practices for rivers, lakes, and small-scale water bodies, Soil protection, conservation, and addressing land degradation issues.

**Module 3: Landscape Maintenance and Management:** Principles and practices of landscape maintenance, Maintenance of vegetation including trees, shrubs, and grasses, Responsible use of fertilizers and pesticides in landscape maintenance.

**Module 4: Landscape Construction and Materials:** Introduction to landscape construction techniques and methodologies, Understanding the role of materials in landscape construction, Typical methods of construction for various landscape elements, Assessment of ongoing construction sites with real-world examples.

**Module 5: Integration and Application:** Integration of sustainability principles, practices, and construction techniques in landscape design projects, Application of knowledge and skills acquired in the course through case studies and design exercises, Exploration of emerging trends and innovations in sustainable landscape architecture.

### **COURSE OUTCOME**

**CO1: Illustrate** principles of sustainability in landscape architecture design projects.



**CO2: Outline** the topography and landforms to determine natural drainage patterns.

**CO3: Identify** the use of indigenous plants and materials for sustainable landscape practices.

**CO4: Make use of** management strategies for rivers, lakes, and soil conservation.

**CO5: Analyze** landscape construction techniques and materials for sustainability.

## REFERENCES

1. Thompson, J. W., & Sorvig, K. (2007). Sustainable landscape construction: A guide to green building outdoors (2nd ed.). Island Press.
2. Dunnett, N., & Clayden, A. (2007). Rain gardens: Managing water sustainably in the garden and designed landscape. Timber Press.
3. Calkins, M., & Wenk, B. (2012). The sustainable sites handbook: A complete guide to the principles, strategies, and best practices for sustainable landscapes. Wiley.
4. Maranhao, D. (2015). Water-smart landscapes: Simple steps to sustainable gardens. Cool Springs Press.
5. Parris, K. M. (2016). Ecology of urban environments (1st ed.). Wiley-Blackwell.

**COURSE TITLE: LANDSCAPE DESIGN (ADVANCE ELECTIVE - III)**

**COURSE CODE: ARC 5006**

**COURSE CREDIT: 6**

## COURSE INTENT

The course aims to synthesize prior elective knowledge into the creation of immersive outdoor spaces enhancing functionality, microclimate, and sustainability, with emphasis on maintenance and management considerations. Through exploration of spatial planning, environmental factors, and indigenous design principles, students will develop skills to innovate and design climate-responsive outdoor environments.

## COURSE CONTENT

**Module 1: Fundamentals of Integrated Design:** Introduction to integrated design principles and methodologies, Exploration of the relationship between functionality, microclimate, and sustainability in outdoor spaces, Understanding the importance of maintenance and management considerations in the design process.

**Module 2: Conceptualization and Design Process:** Techniques for conceptualizing outdoor spaces and developing design concepts, Consideration of site-specific factors including grading, environmental



conditions, and existing elements such as vegetation, soil, and built forms, incorporating principles of spatial planning to optimize functionality and aesthetic appeal.

**Module 3: Immersive and Functional Environments:** Strategies for creating immersive outdoor environments that engage users and enhance their experience, Integration of indigenous design elements and materials to promote cultural identity and connection to place, Exploration of climate-responsive design principles to improve comfort and adaptability in outdoor spaces.

**Module 4: Innovation and Creativity in Design:** Encouragement of innovative thinking and creative problem-solving in outdoor space design, Exploration of emerging trends, technologies, and materials in landscape architecture.

**Module 5: Project Development and Implementation:** Practical aspects of project development, including site analysis, design development, and documentation, Collaboration with stakeholders, consultants, and contractors throughout the design process, Strategies for effective project management and implementation to ensure successful realization of design concepts.

## COURSE OUTCOME

**CO1: Explain** integrated design principles to enhance functionality and sustainability of outdoor spaces.

**CO2: Identify** the relationship between environmental conditions and design strategies for microclimate optimization.

**CO3: Analyze** site-specific factors and existing elements to inform design decisions

**CO4: Evaluate** effectively with stakeholders to develop and implement design projects.

**CO5: Create** innovative and immersive outdoor environments that engage users and promote cultural identity.

## REFERENCES

1. Strom, S., Nathan, K., & Woland, J. (2013). Site engineering for landscape architects (6th ed.). John Wiley & Sons.
2. Thompson, J. W., & Sorvig, K. (2007). Sustainable landscape construction: A guide to green building outdoors (2nd ed.). Island Press.
3. Wilk, S. (2014). Drawing for landscape architects: Construction and design manual. DOM Publishers.
4. Calkins, M. (2008). Materials for sustainable sites: A complete guide to the evaluation, selection, and use of sustainable construction materials. Wiley.



5. Design Workshop. (2015). Landscape architecture documentation standards: Principles, guidelines, and best practices. John Wiley & Sons.

**COURSE TITLE: SUSTAINABLE DESIGN (ADVANCE ELECTIVE - I)**

**COURSE CODE: ARC 4023**

**COURSE CREDIT: 3**

### COURSE INTENT

This course is designed to provide students with a deep understanding of energy-efficient design principles and technologies in the context of building construction.

### COURSE CONTENT

**Module-1: Energy Efficiency:** Define energy-efficient design and its importance in contemporary architecture. Explore the integration of energy-efficient technologies in building design. Understand the role of energy efficiency in mitigating environmental impact.

**Module-2: Energy Efficient Buildings:** Examine the key factors influencing energy efficiency in buildings. Analyze the relationship between building design, occupant behavior, and energy consumption. Explore the economic and environmental benefits of energy-efficient buildings.

**Module-3: Passive Strategies:** Introduce passive design principles for maximizing energy efficiency. Explore concepts such as orientation, insulation, and natural ventilation. Understand the role of building form and materials in passive design.

**Module-4: Active Strategies:** Investigate active design strategies, including solar, wind, and geothermal technologies. Discuss the integration of renewable energy sources in building design. Explore the benefits and challenges of active energy-efficient technologies.

**Module-5: Building Energy Performance Assessment:** Introduce energy modeling as a tool for predicting and evaluating building performance. Explore software tools used for energy analysis and simulation. Provide hands-on experience with energy modeling exercises.

### COURSE OUTCOME

**CO1: Explain** Energy-efficient Design and Technologies.

**CO2: Illustrate** key factors influencing energy efficiency in buildings.



**CO3: Identify** Passive design strategies to achieve energy efficient buildings.

**CO4: Make use of** active design strategies (solar, wind, geothermal, etc.) to achieve energy efficient buildings.

**CO5: Analyse** energy modelling and assess using analysis tools.

## REFERENCES

1. Brown, L. R., & Shaw, P. (1982). Six steps to a sustainable society. Worldwatch Paper 48. Worldwatch Institute, 1776 Massachusetts Avenue, NW, Washington, DC 20036.
2. Kibert, C. J. (2012). Sustainable Construction: Green Building Design and Delivery (Third Edition). New York: John Wiley & Sons, Inc.

**COURSE TITLE: SUSTAINABLE DESIGN (ADVANCE ELECTIVE - II)**

**COURSE CODE: ARC 4016**

**COURSE CREDIT: 3**

## COURSE INTENT

This course is designed to equip students with the knowledge and skills needed to plan and design sites sustainably.

## COURSE CONTENT

**Module-1: Introduction to Sustainable Site Planning:** Examine the criteria for site selection in sustainable design. Conduct site analysis to identify opportunities and challenges. Understand the environmental impact of site decisions.

**Module-2: Sustainable site design:** Define sustainable site planning and its elements. Understand the role of each element of site planning in overall sustainability.

**Module-3: Principles of Sustainable Site Planning:** Explore principles of sustainable urban planning. Understand the challenges and opportunities in rural planning for sustainability. Analyze case studies of successful sustainable urban and rural planning projects.

**Module-4: Sustainable Water management on Sites:** Introduce rainwater harvesting as a sustainable water management practice. Discuss techniques for effective stormwater management. Explore the benefits of decentralized water systems in sustainable site planning.

**Module-5: Use of Landscape for sustainable site design:** Explore the benefits of integrating



landscaping in sustainable design. Discuss the role of landscaping in microclimate regulation. Explore the use of native plants and biodiversity in landscaping. Understand how landscaping contributes to water conservation and energy efficiency.

## COURSE OUTCOME

**CO1: Illustrate** site selection and criteria for sustainable design.

**CO2: Explain** elements of Sustainable Site Planning.

**CO3: Identify** sustainable urban and rural planning principles for site planning.

**CO4: Make use of** rainwater harvesting and identify stormwater management strategies for site.

**CO5: Analyse** the role of landscaping for environmental sustainability.

## REFERENCES

1. Brown, L. R., & Shaw, P. (1982). Six steps to a sustainable society. World Watch Paper No. 48. World Watch Institute.
2. Dholakia, R., & Wackernagel, M. (1999). Ecological Footprint Accounts: Moving Sustainability from Concept to Measurable Goal. Oakland: Redefining Progress.
3. Chaturvedi, S., & Ochsendorf, J. (2004). Global environmental impacts due to cement and steel. Structural Engineering International.

**COURSE TITLE: SUSTAINABLE DESIGN (ADVANCE ELECTIVE - III)**

**COURSE CODE: ARC 5008**

**COURSE CREDIT: 6**

## COURSE INTENT

This course is designed to provide a comprehensive understanding of building performance, life cycle assessment, indoor environmental quality, commissioning, and post-occupancy evaluation.

## COURSE CONTENT

**Module-1: Introduction:** Define building performance and its relevance to sustainable design. Understand the concept of life cycle assessment (LCA) in the context of buildings. Explore the interconnectedness of building systems and their impact on performance.

**Module-2: Life Cycle Assessment:** Introduce life cycle assessment as a tool for evaluating environmental impact. Analyze the life cycle of building materials and systems. Explore sustainable



alternatives and their impact on life cycle assessment.

**Module-3: Indoor Air Quality:** Examine factors influencing indoor environmental quality (IEQ). Explore strategies for enhancing occupant comfort and well-being. Understand the relationship between building design, ventilation, and air quality.

**Module-4: Post Occupancy Evaluation:** Define the concepts of commissioning and post-occupancy evaluation. Explore the role of commissioning in ensuring building performance meets design intent. Understand the importance of post-occupancy evaluation for continuous improvement.

**Module-5: High performance building assessment:** Analyze real-world case studies of sustainable building projects. Identify successful strategies employed in achieving high-performance buildings. Discuss challenges faced and lessons learned from sustainable building case studies.

## COURSE OUTCOME

**CO1: Explain** Building Performance and Life Cycle Assessment.

**CO2: Identify** Life cycle assessment of building materials and systems.

**CO3: Examine** factors to improve Indoor environmental quality and occupant comfort.

**CO4: Evaluate** the role of commissioning and post-occupancy evaluation in building performance.

**CO5: Develop** model for high performance building assessment.

## REFERENCES

1. Majumdar, M. (Ed.). (2001). Energy-efficient buildings in India. The Energy and Resources Institute (TERI).
2. Williams, H. P. (Year). Model building in mathematical programming. John Wiley & Sons.
3. Incropera, F. P., & DeWitt, D. P. (2013). Fundamentals of heat and mass transfer (4th ed.). John Wiley and Sons.
4. Holman, J. P. (1997). Heat transfer (8th ed.). McGraw Hill.
5. Chapra, S. C., & Canale, R. P. (2006). Numeric methods for engineers. Tata McGraw Hi