SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

BACHELOR OF ARCHITECTURE PROGRAMME CURRICULUM JULY 2024

FIRST AND SECOND SEMESTER

FOR 17th SENATE APPROVAL

SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

BACHELOR OF ARCHITECTURE
PROGRAMME CURRICULUM
JULY 2024

1st SEMESTER

FIRST SEMESTER - SCHEME OF EXAMINATION

1ST SEMESTER											
Sr.No.	COURSE CODE	COURSES	L	T	P/S	D	CREDITS	MARKS	END SEMESTER EVALUATON (WR/VV)		
	COMPULSORY CORE COURSES										
1	BARC – 010101	Architectural Design-I	1	0	3	4	8	800	----	VV	
2	BARC - 010103	Building Materials & Construction - I	1	0	3	1	5	500	WR	VV	
3	BARC - 010105	Architectural Graphics - I	1	0	2	1	4	400	WR	---	
4	BARC - 010102	Mathematics for Architecture	1	1	0	0	2	200	WR	---	---
5	BARC - 010104	Structural Mechanics	1	1	0	0	2	200	WR	---	---
6	BARC-010106	Environmental Science, Society & Architecture	1	1	0	0	2	200	WR	---	---
	ELECTIVE COURSES (COMMON IN 1ST AND 2ND SEMESTER)										
7	BARC0101E1	• Any one Elective Course from A-F (refer to list on page number 4) • Minimum 10 and Maximum 25 students will be registered in each elective offered for the courses A-E	1	1	0	0	2	200	WR Or VV		
	TOTAL MARKS							2500			
	NON-CREDIT, COMPULSORY COURSES										
8	BARC010008/H-102	Universal Human Values – II *	3	0	0	0	-	-	-	-	-
	TOTAL CREDITS		25								
	TOTAL CONTACT HOURS		28								

**1. As per AICTE norms, UHV-I will be covered in the Students Induction Program (SIP)*

2.UHV-II assignments and evaluation as per AICTE norms

DEPARTMENT OF ARCHITECTURE

BACHELOR OF ARCHITECTURE PROGRAMME CURRICULUM JULY 2024

2nd SEMESTER

SECOND SEMESTER - SCHEME OF EXAMINATION

2nd SEMESTER											
Sr.No.	COURSE CODE	COURSES	L	T	P/S	D	CREDITS	MARKS	END SEMESTER EVALUATON (WR/VV)		
	COMPULSORY CORE COURSES										
1	BARC – 020101	Architectural Design - II	1	0	3	4	8	800	----	VV	
2	BARC – 020103	Building Materials & Construction - II	1	0	3	1	5	500	WR	VV	
3	BARC – 020105	Architectural Graphics - II	1	0	2	1	4	400	----	VV	
4	BARC – 020102	Surveying & Levelling	1	0	1	0	2	200	WR	---	---
5	BARC – 020104	Strength of Materials	1	1	0	0	2	200	WR	---	---
6	BARC – 020106	History of Architecture- I	1	1	0	0	2	200	WR	---	---
	ELECTIVE COURSES (COMMON IN 1ST AND 2ND SEMESTER)										
7	BARC0201E1	• Any one Elective Course from A-F (refer to list on page number 4) • Minimum 10 and Maximum 25 students will be registered in each elective offered for the courses A-E	1	1	0	0	2	200	WR Or VV		
	TOTAL MARKS							2500			
	NON-CREDIT, COMPULSORY COURSES										
8	BARC020008	General Proficiency	0	0	0	0	-	-	VV	-	-
	TOTAL CREDITS		25								
	TOTAL CONTACT HOURS		25								

SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

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BACHELOR OF ARCHITECTURE
PROGRAMME CURRICULUM
JULY 2024

FIRST AND SECOND SEMESTER ELECTIVE COURSES - SCHEME OF EXAMINATION

1ST AND 2nd SEMESTER ELECTIVE COURSES (COMMON IN 1ST AND 2ND SEMESTER)											
Sr.No.	COURSE CODE	COURSES	L	T	P/S	D	CREDITS	MARKS	END SEMESTER EVALUATON (WR/VV)		
ELECTIVE COURSES (Any one subject from the pool) * For details refer Page number 41 onwards.											
1	BARC0101E1/ BARC0201E1	A. Documentation & Hands on Workshop	1	1	0	0	2	200		VV	---
2		B. Architectural Photography	1	1	0	0				VV	
3		C. Communication Skills	1	1	0	0				VV	
4		D. Physical Model Making	1	1	0	0				VV	
5		E. Skill based Flexible elective by department	1	1	0	0			WR or VV		
6		F. MOOC/ SWAYAM/NPTEL/Other Equivalent Online Courses (skill based)	1	1	0	0				VV	

* Minimum 10 and Maximum 25 students will be registered in each elective offered for the courses A-E

SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

BACHELOR OF ARCHITECTURE PROGRAMME CURRICULUM JULY 2024

FIRST SEMESTER COMPULSORY CORE COURSE DETAILS

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010101	Architectural Design-I	8	1	0	3	4

Course Overview:

- The aim of this subject is to familiarize students with visual grammar, elements of design and methods of visual composition with various mediums and color. The intention of space design activity will be limited to the level of visual composition of architectural spaces considering human activity and anthropometry. There would be several studio/ design thinking exercises based on the module contents as is described below. The module may be taken up by the faculty in order of preference. The order should be common in both the sections of the same year. The faculty may achieve stated minimum outcome using various strategies and approaches.
- Parallel courses would give assignments connected with the current design exercise(s) as part of their course work.
- A time problem of 6-8 hours continuous duration may be conducted in addition to the regular assignments during the semester. The time problem may or may not be connected to the regular/main assignment.

Course Outcomes

Domain	Category	Outcome
Cognitive	Understanding	To **understand** the application of visual grammar in the domain of Visual design
Psychomotor	Precision	To **create** 2D and 3D compositions with various mediums
Affective	Responding	To **critique** basic design composition
Psychomotor	Precision	To **measure** the existing spaces through scaled drawings
Affective	Valuing	To **analyze** the human activities in built environment
Affective	Responding	To **respond** to the given stimulus within the time constraint

Module 1:	**Freehand sketches and Colour theory in Design**
	Learning Resources / References & Learning Strategy • Brief description on sketching tools and techniques. • Lecture on Elements of Design and colour theory
	Module Contents • Sketching of indoor, outdoor, objects, landscape , living beings and non-living things. • Creation of Colour wheel and relationships among various colour • Application of colour in built form and objects
Module 2:	**Study and Application of elements of design, visual grammar, and principles of basic composition**
	Learning Resources / References & Learning Strategy • Lecture on Principles of Design and design composition.
	Module Contents • Elements of Design in basic composition • Application of visual grammar and gestalt principles • Evaluation of two-dimensional composition with the help of above aspects
Module 3:	**Integration of colour theory and visual grammar in composition**

	Module Contents • Design of two-dimensional composition in black and white medium • Design of two-dimensional composition in color medium • Evaluate the composition with Visual Grammar
Module 4:	**Transformation from two-dimensional shape to three-dimensional form**
	Module Contents • Form generation techniques – from 2D to 3D, Additive and Subtractive forms. • Construction of 3D form with various material and colors. • Evaluation and Analysis of 3D form with visual grammar.
Module 5:	**Anthropometric study of human activity space**
	Module Contents • Measured drawing of human activity spaces. • Study of relationship between human body movement and human activity. • Relationship between human activity and built space.
Module 6:	**Study and review of design related book/ article, culmination of sketching practices**
	Module Contents • Study of one book/ article about design • Presentation of review in written/ verbal/ any other form of the above • Submission and self-evaluation, of all sketching work done in the semester.

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments and time problem	50%
End term Examination/VV	50%

Learning Resources/References

- A Visual Dictionary of Design by Francis D. K. Ching
- Form, Space and Order by Francis D. K. Ching
- Rendering with Pen and Ink by Robert W. Gill
- Other learning resources as and when recommended by the faculty

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010103	Building Materials & Construction - I	5	1	0	3	1

Course Overview:

- To familiarize students with building elements of substructure and superstructure, materials and construction techniques.
- The students will apply the construction techniques involved in masonry work with different materials like brick, stone and composite materials in different locations like T- junctions, independent piers and corner junctions.
- Students will understand the importance of various bonds through brick/stone models and the assembling of these models in the form of courses and bonds.
- The subject will also introduce shallow foundations in a building and their construction techniques.
- The subject is to be integrated with the parallel subject of Basic Design through one (minimum) of its assignments.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Understanding	To **identify** basic building components and its function
Cognitive	Understanding	To **recognize** the various types of clay products in construction and masonry
Cognitive	Analyzing	To **apply** the construction of different type of structures using brick and stone
Cognitive	Understanding	To **identify** foundation used for load bearing structures
Cognitive	Analyzing	To **apply** composite materials for masonry works
Cognitive	Evaluating	To **evaluate** best suitable temporary supportive structure on construction site
Cognitive	Understanding	To **be aware of** the properties and applications of various materials

Module 1: Introduction to components of building

Learning Objectives

- To make students familiar with various components of building with its functions

Module Contents

- Introduction to component of buildings, its terminology from foundation to roof
- Function of various components of buildings
- Category as Super and Sub- Structure

Module 2: Introduction to different types of Masonry: Brick, Stone & Composite

Learning Objectives

- To introduce various building materials, its properties used for construction of buildings.
- To familiarize various construction techniques for masonry

Module Contents

- Introduction to stone, classification, characteristics, and miscellaneous use of stones
- Rubble work: Random rubble, built-to-course, coursed masonry, etc.
- Introduction to brick terminology, classification of bricks, test for bricks, special type of bricks, types of bonds, special bonds, principle, and applications.
- Construction details using bricks- bonds, quoins, junctions.
- Construction methods and details of composite masonry

Module 3 Construction using Brick and Stone

Learning Objectives

- To learn construction of various elements of building using brick and stone

	• Isolated and attached piers, jali, buttress, corbelling, coping. • Illustration of terminology for arches, classification of Arches based on geometrical shape, materials, construction techniques, viz. flat, segmental, semicircular, Tudor, circular, elliptical, semi-elliptical, venetian, Florentine arches, etc., and their construction detailing. • Concept of Thermal comfort and acoustic insulation, construction detail of Cavity Wall with different thermal and acoustical insulative system
Module 4	**Shallow Foundation**
	Learning Objectives To introduce foundation as sub-structure, its construction techniques and process.
	Module Contents • Introduction to foundation, its function, design criteria, safe bearing capacity of different types of soils, depths and widths of foundations • Shallow foundation: Types, Isolated, combined and raft foundations and their construction techniques. • Introduction to DPC (Horizontal and Vertical DPC), water proofing materials
Module 5	**Temporary supporting structure for construction**
	Learning Objectives Make students aware of temporary structures.
	Module Contents • Trench timbering for foundation, • Centering for arches
Module 6	**Building Material**
	Learning Objectives To introduce various building materials used in construction of buildings
	Module Contents • **Clay Products:** Ceramic, Bricks, Compressed Stabilized Earth Blocks (CSEB/ CEB/ CSMB) • **Lime:** Sources of lime, Classification and manufacturing process of lime, Fat and hydraulic lime – properties and use, tests on lime, etc. • **Cement:** Composition of ordinary cement, function of cement ingredients, properties of cement – soundness, setting time, strength, etc. Grade of cement and different types of cement used in construction. Manufacturing process of ordinary cement in dry and wet method, packing and storage of cement, use of cement. • **Sand:** Sand, sources of sand and its classification, tests on sand, • **Mortar:** Classification of mortar – lime mortar, mud mortar, *surkhi* mortar, cement mortar, preparation of mortar and its properties, use and selection of mortar for different construction work, etc. • **Aggregate:** Types -Fine and Coarse aggregate, PCC, RCC

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination & VV	50%

Learning Resources / References & Learning Strategy

The modules may be taught through graphical and physical demonstration, site visits, report making, seminars, model- making, market survey, and other innovative teaching methods.

- Building Construction Illustrated by Francis D. K. Ching
- Building Construction by W B Mackay (Volume 1 and Volume 2)
- Building Construction by Rangwala
- Engineering Materials by Rangwala
- Building Construction by B C Punmia, Ashok K. Jain and Arun K. Jain
- Building Materials by Gurcharan Singh
- Building Construction Handbook by R. Chudely
- Other learning resources as and when recommended by the faculty.

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010105	Architectural Graphics - I	4	1	0	2	1

Course Overview:

- To introduce and familiarize students with drafting tools and accessories and provide basic knowledge and skill to draft a drawing manually.
- Developing drafting skills through different types of lines, their intensity and interpretation. Also understanding the scale of drawing, dimensioning, lettering techniques and layout of sheets.
- Visualizing and drawing geometric forms in different positions using orthographic projections and sciography.
- Introducing the importance of rendering and exploring different methods/ techniques of rendering in various exercises.
- The subject will be taught in congruence with the current Basic Design studio and other subjects like Mathematics for Architecture and Workshop. The assignments for the subject may be linked to design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Understanding	**To recognize** and select drawing tools and techniques for drafting basic drawing
Psychomotor	Imitation	To **identify** a type of line, intensity, thickness, text to draw a shape.
Psychomotor	Manipulation	To **implement** a scale, dimension for a layout of sheet or drawing
Psychomotor	Precision	To **demonstrate** a line, plane and solid using orthographic projections
Psychomotor	Precision	To **demonstrate** the section of solid into drawing using orthographic projections
Psychomotor	Articulation	To **construct** the drawings of complex compositions
Psychomotor	Articulation	To **integrate** the 2-dimensional drawings with the rendering techniques to enhance the drawing

Module 1:	**Introduction to drawing**
	Learning Objectives • To become familiar with various drawing instruments and its uses to draw geometric and non-geometric shapes
	Module Contents • Drawing instruments and its uses • Sheet layout and sketches • Lines, lettering, scales and dimensioning
Module 2	**Orthographic Projections: Point, Line and Planes**
	Learning Objectives • To understand orthographic projections of points, lines, planes and solids located at various positions.
	Module Contents • Introduction to Projections, Principle and Methods of Projections • Orthographic Projections of Point, Line and Plane at different positions
Module 3	**Orthographic Projections: Solids**

	Learning Objectives • To understand orthographic projections of solids located at various positions. .
	Module Contents • Projections of Solids in different positions • Application of Projection for preparing architectural drawings
Module 4	**Sciography: Two-Dimension**
	Learning Objectives • To understand and apply the concept of sciography on objects, and building elements
	Module Contents • Introduction to Shades and Sciography • Application of Sciography in 2 dimensional drawings with rendering techniques
Module 5:	**Sections: Solids**
	Learning Objectives • To understand and draw the sections of solids
	Module Contents • Introduction of section of solids with simple forms • Concept and methods of drawing section of solids • Section of complex form or structures
Module 6:	**Drawing and Rendering**
	Learning Objectives • Application of orthographic projection in building drawings with rendering techniques.
	Module Contents • To demonstrate the orthographic projection in representing the building drawing • Application of sections for simple building drawings. • Preparing Plan, Elevations and Section of simple building drawing • Adopting various rendering techniques for presentation of drawings

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination/**VV**	50%

Learning Resources / References & Learning Strategy

*** Lecture, Models, Presentation and Videos are among the few strategies that may be adopted for the teaching-learning process.**

- Elementary Engineering Drawing: Plane and Solid Geometry by N. D. Bhatt
- Rendering with Pen and Ink by Robert W. Gill
- Architectural Graphics by Francis D. K. Ching
- Engineering Drawing by B.V.R. Gupta
- Engineering Drawing: With Creative Design, Volume 2, by Hiram. E. Grant
- Architectural Drawing: Perspective, Light and Shadow, Rendering by Sherley W. Morgan
- Rendering in Pen and Ink by Arthur L. Guptil
- Other learning resources as and when recommended by the faculty

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010102	Mathematics for Architecture	2	1	1	0	0

Course Overview:

- The design of a building relies on a clear understanding of shapes, lines and angles, which is why mathematics is an essential part of learning an architectural degree.
- Four primary areas of Math study namely – geometry, trigonometry, Calculus and finite Math are required to become a well-rounded and successful architect.
- Each of these core concepts will teach students the skills needed to design a building and more importantly to design a building that can be constructed properly by following that design.
- Architectural connection could be established by taking examples from historical/ contemporary buildings designed using geometry.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Applying	**To develop** the foundation for Interior Design, architecture, artistry and design
Psychomotor	Precision	**To develop** concern for working precisely (both models and drawings)
Psychomotor	Precision	**To practice** clear and concise drawings
Psychomotor	Articulation	**To develop** analytical thinking skills
Cognitive	Analyzing	**To relate** connections between images and numbers
Psychomotor	Precision	**To show** concern for working precisely (both models and drawings)

Module 1	**Basic Geometry**
	Learning Objectives • Develop precision with compass and ruler • Widen arithmetic skills
	Module Contents • Study of shapes • Linear Progression • Artistic expression (Using geometry in architectural elements) • Three-dimensions (3D shapes from 2D)
Module 2	**Trigonometry**
	Learning Objectives • To include angles and corners in architectural design. • Enables to draw properly load-bearing walls in the right places in the building
	Module Contents • Angles of intersection for components of structure • Use of trigonometry in arches, domes, support beams, and suspension bridges • To find the length of wall using trigonometry • Tangents
Module 3	**Using Geometries to Apply Trigonometry**
	Module Contents

	• Pythagoras • Pythagoras Theorem • Measure of cube and other solids • Trigonometric applications • Exercises
Module 4	**Calculus**
	Module Contents • Differentiation and methods of differentiation • Applications to rates of change and small errors • Successive differentiation • Tangents and Normal: Angle of intersection of curves • Radius of curvature in Cartesian coordinates. • Polar coordinates: Angle between radius-vector and tangent • Simple curves tracing and ideas of asymptotes. • Taylor's and Maclaurin's expansions • Maxima and minima of functions of one variable. • Determination: Solution of linear simultaneous equations, Partial differentiation • Euler's theorem: Total differentials: small errors • Taylor's series for two variables: Maxima and minima of two variables. • Fractional exposition, Conversions, Graphs, Circumscribing a circle
Module 5	**Finite Math**
	Learning Objectives • To make mathematical models • Calculate probability. • Make statistical equations
	Module Contents • Mathematical Models • Linear Programming (relationship between a design and its construction and its profit potential) Statistical Equations

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References

- The Power of Limits: Proportional Harmonies in Nature, Art, and Architecture by Gyorgy Doczi
- Mathematics for the non-mathematician by Morris Kline
- The Fractal Dimension of Architecture (Mathematics and the Built Environment) by Michael J. Ostwald and Josephine Vaughan
- New Mathematics of Architecture by Jane Burry and Mark Burry
- Architecture and Mathematics from Antiquity to the Future: Volume I: Antiquity to the 1500s by Kim Williams and Michael J. Ostwald
- Other learning resources as and when recommended by the faculty.

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010104	Structural Mechanics	2	1	1	0	0

Course Overview:

- The course would enable students to understand various principles of strength of materials especially in the case of beams, columns, and trusses.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Remembering	To **learn** of stresses and strains and their effect in various elements
Cognitive	Remembering	To **understand** the Inter-relationship between Young's modulus of elasticity. Bulk modulus of elasticity and modulus of rigidity
Cognitive	Understanding	To **understand** Analytical method for determining stresses and strains in the oblique section.
Cognitive	Understanding	To **learn** the requirement of a particular type of footing, beam, slab or retaining wall in a building
Cognitive	Remembering	To **study** of resolution of forces and theorem related with equilibrium
Psychomotor	Articulate	To **develop** shear force and bending moment diagrams.

Module 1	**Simple Stresses and Strains**	
	Learning Objectives Study of stresses and strains and their effect in various elements	
	Module Contents • Introduction to stresses and strains • Types of stress and strain • Elasticity and elastic limit • Hook's law and elastic moduli • Modulus of elasticity (Young's Modulus) • Factor of safety • Constitutive relationship between stress and strain	• Analysis of bars of varying sections • Analysis of uniformly tapering circular rod • Analysis of uniformly tapering rectangular bar. • Analysis of bars of composite sections • Thermal Stresses • Thermal stresses in composite bars • Elongation of bar due to its own weight • Analysis bar of uniform strength
Module 2	**Elastic Constants**	
	Learning Objectives Inter-relationship between Young's modulus of elasticity, Bulk modulus of elasticity and modulus of rigidity	
	Module Contents • Longitudinal strain • Lateral Strain • Poisson's Ratio	• Volumetric Strain • Volumetric strain of cylindrical rod • Bulk modulus • Principle of complementary shear stresses
Module 3	**Principal Stresses and strains**	
	Learning Objectives	

<table>
<tr><td></td><td colspan="2">Analytical method for determining stresses and strains in the oblique section.</td></tr>
<tr><td></td><td colspan="2">Module Contents
• Introduction
• Principal planes and Principal Stresses
• Methods for determining stresses on oblique section</td></tr>
<tr><td>Module 4</td><td colspan="2">Centre of gravity and Moment of Inertia</td></tr>
<tr><td></td><td colspan="2">Learning Objectives
To learn why we provide a particular type of footing, beam, slab or retaining wall in a building.</td></tr>
<tr><td></td><td>Module Contents
• Centre of gravity
• Centroid
• Centroid or centre of gravity of simple plane figures
• Centroid of plane figures by plane of moments
• Area moment of inertia
• Radius of gyration</td><td>• Theorem of perpendicular axis
• Theorem of parallel axis
• Determination of area moment of inertia
• Mass moment of inertia
• Product of inertia
• Principal axes
• Principal moments of inertia.</td></tr>
<tr><td>Module 5</td><td colspan="2">Elements of Static</td></tr>
<tr><td></td><td colspan="2">Learning Objectives
Basic study of resolution of forces as well as various study of various theorem related with equilibrium</td></tr>
<tr><td></td><td>Module Contents
• Parallelogram Law of Forces
• Resolution of forces- Triangular Law of forces, Polygon Forces.
• Theorem of Resolved Parts.</td><td>• Resultant of concurrent coplanar forces.
• Equilibrium
• Moment of a Force.
• Moment and Arm of a Couple</td></tr>
<tr><td>Module 6</td><td colspan="2">Shear force and bending moment diagrams</td></tr>
<tr><td></td><td colspan="2">Learning Objectives
To learn how to draw and make shear force and bending moment diagrams</td></tr>
<tr><td></td><td>Module Contents
• Shear force and bending moment diagrams
• Types of beams
• Types of loads
• Sign conventions for shear force and bending moment diagram
• Important points for shear force and bending moment diagrams
• S.F and B.M. diagram for a cantilever with a point load at the free end
• S.F and B.M. diagram for a cantilever with a uniformly distributed load
• S.F and B.M. diagram for a cantilever with a uniformly varying load</td><td>• S.F and B.M. diagram for a simply supported beam with a point load at the mid-point
• S.F and B.M. diagram for a simply supported beam with an eccentric point load
• S.F and B.M. diagram for a simply supported beam carrying a uniformly distributed load
• S.F and B.M. diagram for a simply supported beam carrying a uniformly varying load
• S.F and B.M. diagram for overhanging beams
• S.F and B.M. diagram for beams carrying inclined load
• S.F and B.M. diagram for beams subjected to couples
• Relationship between load, shear force and bending moment diagrams</td></tr>
</table>

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References

- Strength of Materials by Dr. R.K. Bansal
- Strength of Materials by R.S. Khurmi
- Engineering Mechanics by R.S. Khurmi
- Structure II by Bhavikutti.
- IS Codes:
  1. IS 465: 2000.
  2. SP-16
  3. SP-34
- Other learning resources as and when recommended by the faculty

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010106	Environmental Science, Society and Architecture	2	1	1	0	0

Course Overview:

- To gain foundational knowledge about the natural environment and environmental processes.
- To understand linkages between society at large, human activities and the environment.
- To utilize concepts, methods, and findings from cultural anthropology to explore architectural questions.
- To analyze the inter-connectedness of societal factors and environmental conditions.
- To understand the relationship between traditions, indigenization, and culture, focusing on how socio- cultural dynamics influence architectural practices.
- The curriculum further incorporates understanding in relation to Indian context.
- The course will act as a threshold to more advanced subjects of architecture in later semesters.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Understanding	To make the students **aware** about the scientific knowledge and current debates on the environment at three nested scales, including their interlink ages – Global, Regional and Local.
Cognitive	Understanding	To **enable** the students to understand cause-and-effect relationships between various human, natural and climatic factors that impinges upon ecological systems, their linkages, and the built environment.
Cognitive	Understanding	To make students **aware** about the evolution of socio-cultural practices and its impact on architecture
Cognitive	Analyzing	To **integrate** the knowledge with architectural examples that have complex briefs, including socio-cultural and environmental factors.

Module 1: Fundamentals of Environment & Ecology

Learning Objectives

- **Knowledge** – Environmental components and processes.
- **Comprehension** – Interlinkages between environmental and human activities

Learning Strategy

Illustrated Lectures, Films, and Introduction of Texts on Environmental Science and Human Ecology

Module Contents

- Environment definition, Environmental Segments, Concepts of Ecosystem: Fundamentals of Ecology and Ecosystem, Components of ecosystem, definition of Ecology, ecosystem processes in a site, Organisms and the Environment, Habitat and Niche, Environmental Factors, Ecological Adaptations, Population, Biotic Community and Succession
- Introduction, types, characteristic features, structure and function of different ecosystems: Forest, Grassland, Desert and Aquatic ecosystem.

Module 2: India's Bio-geographic regions

Learning Objectives

- ***Knowledge*** – Knowledge of India's biological diversity and biogeographic zones, ecoregions & ecosystems
- ***Comprehension*** – Socio-cultural linkages with environment and its impact on architecture

Learning Strategy

Illustrated Lectures, Films, and Introduction of Texts on Environmental Science and Human Ecology

Module Contents

- List India's Biological Diversity in relation to the physio-geographic regions.
- Identification of Principal Bio-geographic Zones of India and their description
- List of Eco-regions of India –Floristic and Physiographic (eg. IMI0301 etc.)
- Distinguish Between Floristic differences in an eco-region say Narmada Valley Dry Deciduous Forest, say Topical Moist Deciduous Forest (Pachmarhi)
- Evaluate the importance of biological diversity to all Life – Interconnections between Biological diversity and Human life – sustenance.
- Impact of Environmental features on development of Socio-cultural practices and its linkage with architecture

Module 3: Environmental Degradation and Human Impacts

Learning Objectives

- **Understand;** cause-and-effect relationships between various human, natural and climatic factors that impinge upon ecological systems and their linkages.

Learning Strategy

Illustrated Lectures, Texts, Case Studies and examples

Module Contents

- Effects of human activities on environment: Agriculture, Housing, Industry, Mining and Transportation activities, Cite the known threats to India's & the World's Biological Diversity
- Analyse Global Climate Change & impacts – with respect to rural/urban communities (Increased risk/ vulnerabilities)
- Analyse the impacts of environmental degradation on traditional communities by abstracting from published reports.
- Social impacts of climate change

Module 4: Applications of Ecological Methods and Techniques in Architecture

Learning Objectives

To understand implementation of ecological architecture at unit level and site planning level.

Learning Strategy

Illustrated Lectures, Texts, Case Studies and examples

Module Contents

- Site Planning consideration
- Rainwater harvesting (contour bunds, wells, etc)
- Techniques of wastewater management (house level, bio swales etc)

Ecological planting (planting for wildlife, land improvement etc)

Module 5: Culture, Society and Civilization

Learning Objectives

- To gain understanding of society, culture, and civilization
- To appraise the dynamic relationship between these three attributes
- To recognize architecture to be approached as a cultural practice

Learning Strategy

- Illustrated Lectures, Texts, Case Studies, and examples

Module Contents

- Introduction to Sociology and its relationship to architecture
- Forms of social organization
- Different theories about culture and social identity with reference to architecture
- The evolution of architecture across the centuries
- Socio-economic, cultural and Political systems and its relationship to architecture
- Architecture as an identity

Module 6: Indigenization and Cultural Change

Learning Objectives

- To equip the students for comprehending process of architectural transformation in history and culture.

Learning Strategy

Architecture in Cultural Change: Essays in Built Form and Culture Research

Module Contents

- Changes in forms of historical architecture
- Debates on vernacular architecture
- Localization and globalization of design practices in India and the world
- Loss of architectural identify and role of culture
- Definition of Renewal, transformation, redevelopment, rejuvenation in architectural context

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References & Learning Strategy

Learning resources as and when recommended by the faculty.

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Non-Credit Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01	BARC-010008/H-102	**Universal Human Values- II** (as given by AICTE)	-	2	1	0	0

Course Overview:

During the Induction Program, students would get an initial exposure to human values through Universal Human Values-I. This exposure is to be augmented by this compulsory full semester foundation course.

Course Objectives

This introductory course input is intended:

1. To help the students appreciate the essential complementary between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.

2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.

3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature. Thus, this course is intended to provide a much-needed orientational input in value education to the young enquiring minds

Module 1	**Introduction to Value Education** **(6 lectures and 3 tutorials for practice session)**
	Lecture 1: Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) **Lecture 2**: Understanding Value Education Tutorial 1: Practice Session PS1 Sharing about Oneself **Lecture 3:** Self-exploration as the Process for Value Education **Lecture 4:** Continuous Happiness and Prosperity – the Basic Human Aspirations Tutorial 2: Practice Session PS2 Exploring Human Consciousness **Lecture 5:** Happiness and Prosperity – Current Scenario **Lecture 6:** Method to Fulfil the Basic Human Aspirations **Tutorial 3:** Practice Session PS3 Exploring Natural Acceptance
Module 2	**Harmony in the Human Being (6 lectures and 3 tutorials for practice session)**
	Lecture 7: Understanding Human being as the Co-existence of the Self and the Body **Lecture 8**: Distinguishing between the Needs of the Self and the Body Tutorial 4: Practice Session PS4 Exploring the difference of Needs of Self and Body **Lecture 9:** The Body as an Instrument of the Self **Lecture 10**: Understanding Harmony in the Self Tutorial 5: Practice Session PS5 Exploring Sources of Imagination in the Self **Lecture 11:** Harmony of the Self with the Body **Lecture 12:** Programme to ensure self-regulation and Health **Tutorial 6:** Practice Session PS6 Exploring Harmony of Self with the Bod
Module 3	**Harmony in the Family and Society** (6 lectures and 3 tutorials for practice session)
	Lecture 13: Harmony in the Family – the Basic Unit of Human Interaction **Lecture 14**: 'Trust' – the Foundational Value in Relationship **Tutorial 7:** Practice Session PS7 Exploring the Feeling of Trust **Lecture 15**: 'Respect' – as the Right Evaluation **Tutorial 8:** Practice Session PS8 Exploring the Feeling of Respect

	Lecture 16: Other Feelings, Justice in Human-to-Human Relationship **Lecture 17:** Understanding Harmony in the Society **Lecture 18:** Vision for the Universal Human Order **Tutorial 9:** Practice Session PS9 Exploring Systems to fulfil Human Goal
Module 4	**Harmony in the Nature/Existence** (4 lectures and 2 tutorials for practice session)
	Lecture 19: Understanding Harmony in the Nature **Lecture 20:** Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature **Tutorial 10:** Practice Session PS10 Exploring the Four Orders of Nature **Lecture 21:** Realizing Existence as Co-existence at All Levels **Lecture 22:** The Holistic Perception of Harmony in Existence **Tutorial 11:** Practice Session PS11 Exploring Co-existence in Existence
Module 5	**Implications of the Holistic Understanding – a Look at Professional Ethics** (6 lectures and 3 tutorials for practice session)
	Lecture 23: Natural Acceptance of Human Values **Lecture 24:** Definitiveness of (Ethical) Human Conduct Tutorial 12: Practice Session PS12 Exploring Ethical Human Conduct **Lecture 25**: A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order **Lecture 26:** Competence in Professional Ethics **Tutorial 13:** Practice Session PS13 Exploring Humanistic Models in Education **Lecture 27:** Holistic Technologies, Production Systems and Management Models-Typical Case Studies **Lecture 28:** Strategies for Transition towards Value-based Life and Profession **Tutorial 14:** Practice Session PS14 Exploring Steps of Transition towards Universal Human Order

Evaluation: Distribution of % of marks

Assignments and evaluation as per AICTE norms

Learning Resources / References

1-**Text Book and Teachers Manual**

- The Textbook A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034- 47-1
- The Teacher"s Manual Teachers" Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2 nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2 3-

2-**Reference Books**

1. JeevanVidya: EkParichaya, A Nagaraj, JeevanVidyaPrakashan, Amarkantak, 1999.
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3. The Story of Stuff (Book).
4. The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
5. Small is Beautiful - E. F Schumacher.
6. Slow is Beautiful - Cecile Andrews
7. Economy of Permanence - J C Kumarappa
8. Bharat Mein Angreji Raj – Pandit Sunderlal
9. Rediscovering India - by Dharampal
10. Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi

11. India Wins Freedom - Maulana Abdul Kalam Azad 12. Vivekananda - Romain Rolland (English) 13. Gandhi - Romain Rolland (English) 14. Other learning resources as and when recommended by the faculty
https://www.aicte-india.org/sites/default/files/Model_Curriculum/UG-1/ug-vol1.pdf#page=16

SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

BACHELOR OF ARCHITECTURE PROGRAMME CURRICULUM JULY 2024

SECOND SEMESTER COMPULSORY CORE COURSE DETAILS

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020101	Architectural Design - II	8	1	0	3	4

Course Overview:

- The aim of this subject is to familiarise the students with architectural design process through small scale projects of human habitat. The design activity will be limited to the level of visual composition of architectural spaces considering human activity and anthropometry, building material exploration, colour etc. There would be several studio/ design thinking exercises based on the module contents as is described below. The module may be taken up by the faculty in order of preference. The order should be common in both the sections of the same year. The faculty may achieve stated minimum outcome using various strategies and approaches.
- Examples of project: Small living space, home stay, small showroom, Shop, Small Activity space, Exhibition space etc.
- Parallel subjects would give assignments connected with the current design exercise(s) as part of their course work.
- A time problem of 6-8 hours continuous duration may be conducted in addition to the regular assignments during the semester. The time problem may or may not be connected to the regular/main assignment.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Understanding	To **understand** the application of the architectural design process for small scale projects of human habitat
Psychomotor	Articulation	To **transform** the human behavioural needs into architectural program requirements
Affective	Valuing	To **analyse** the information on context and the human-space relationship
Affective	Valuing	To **compose** the architectural spaces in a design project
Psychomotor	Precision	To **communicate** architectural drawings with the help of various mediums

Module 1	**Design process and human as user of space**
	Module Contents • Study and differentiate human needs, wants and desire • Study of cases for different user's requirements • Transform the behavioural requirements into space form • Study of relationship among spaces with proximity chart, storytelling etc.
Module 2	**Human activity and context**
	Module Contents

	• Study of a context and its surroundings and collect information • Analyse the above information in favour of the usage perspective • Understanding of human scale to the context
Module 3	**Planning of Spaces**
	Module Contents • Distribution of the human activity spaces along the context considering the context as visual background • Analyse the relationship among the spaces • Verbal presentation on planning of built environment with different mediums
Module 4	**Architectural Composition**
	Module Contents • Composition of spaces with geometric or non-geometric forms • Visualisation of Architectural composition from different positions on context • Colour composition of exterior and interior spaces • Application of building materials according to colour composition and texture • Verbal presentation with technical drawings of built form
Module 5	**Detail design of interior spaces with a theme**
	Module Contents • Detail planning and design of Interior spaces considering human needs and human anthropometric data with a theme • Application of building materials with colour and texture in detail design • Verbal presentation of Interior spaces

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References/ Learning Strategy

- Audio/visual presentation, model making, sketching with different techniques, photography
- All the above modules will be evaluated in the form of verbal presentation of design work, write up material, drawing work, model making, photography etc.
- Architectural Design by Jane Anderson
- Elements of Space Making by Yatin Pandya
- Other learning resources as and when recommended by the faculty

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020103	Building Materials and Construction - II	5	1	0	3	1

Course Overview:

In this semester, study of foundation is continued with introduction to RCC frame structures system and its construction techniques

- To develop an external wall section with the knowledge gained in **Building Materials and Construction – I, with** detailed study of building elements like doors, windows, sills, copings, lintels etc.
- The study in the semester increases in complexity and hence focused on detailing different types of deep foundations.
- Introduction to RCC framed structures, temporary supporting structures for construction,
- Equip students with vertical transport systems in a building, specifically, staircases and its detailing.
- Students will also learn about some of the building materials like concrete, clay used for flooring materials, water proofing materials and the techniques at all building levels.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Understanding	To **develop** understanding about complex foundations and the constructions techniques involved.
Cognitive	Remembering	To **recognize** different construction details required in form of external wall section
Cognitive	Understanding	To **understand** the importance of concrete, RCC elements and details used in construction To **comprehend** the details/ arrangements for frame structures
Cognitive	Evaluation	To **evaluate** the best suitable vertical transport system in a building
Cognitive	Understanding	To **learn** properties of various construction materials like waterproofing materials, clay used as flooring materials and hollow blocks used in the building industry.
Module 1	**External Wall Section**	
	Learning Objectives Learning the Construction details of external brick wall section	
	Module Contents • Construction details of external brick wall section	
Module 2	**Introduction to Concrete and RCC elements like Columns, Beams and Slabs**	
	Learning Objectives • To familiarize students with basic information about construction procedures and reinforcement detailing about RCC elements like Columns, Beams and Slabs. Also to make students aware of joining details of columns, beams and slabs.	
	Module Content • **Concrete:** Composition, properties of PCC and RCC, methods of concrete construction – various stages involved like – batching, mixing, transporting, compacting, curing, and admixtures Also study collared concrete, light weight concrete precast concrete, quality control of concrete with defect and repair in concrete.	

	• **RCC Elements:** Columns, Beams, Slabs • **RCC details of Framed Structures** • **Buttresses & Retaining Wall**
Module 3	**Temporary Supporting Structures**
	Learning Objectives To introduce concrete as mixture of cement sand and aggregate.
	Module Content • Shuttering • Formwork • Scaffolding • Shoring • Underpinning
Module 4	**Deep Foundations**
	Learning Objectives • To develop understanding about the principles, construction techniques in deep foundations.
	Module Content • Deep Foundation: Grillage foundations, Piles foundations, Caisson foundations, etc.
Module 5	**Introduction to Vertical Transportations - Staircase**
	Learning Objectives • Make students aware of vertical circulation specially through staircases with all technical terms related to it.
	Module Content • Technical terminology involved, Different types of staircases- dog-legged, circular, open well, spiral, elliptical, etc. Classification also based on materials like wooden, steel and RCC • Staircase layout and its construction details, different elements of staircases, etc. • Design and details of construction of staircases in timber, stone, RCC and steel. • Introducing different types of elevators, design criteria for provision of Elevators, Details of construction
Module 6	**Building Materials**
	Learning Objectives • To understand properties, application of various building materials in the building industry. • To become aware of conventional and new building materials
	Module Contents • **Clay Products:** Flooring and roofing tiles, their properties, manufacturing process, laying of tiles, etc. Clay products like terra-cotta, earthenware, stoneware, porcelain, mud – its stabilization and uses, etc. • **Water Proofing Materials:** importance of water proofing materials, stages, methods and techniques of waterproofing, contemporary water proofing materials used in the building industry, Waterproofing details in different levels: details in, walls, roofs, sills, lintels and roofs in RCC, RB and steel, damp proof details of plinth, sill, lintel, and roof level. • **Hollow and Panel walls:** Economy and advantages over solid load bearing walls, practical consideration during construction hollow concrete block construction, different types of partition wall. Reinforced brick work.

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References & Learning Strategy

The modules may be taught through graphical and physical demonstration, site visits, report making, seminars, model- making, market survey, and other innovative teaching methods.

- Building Construction Illustrated by Francis D. K. Ching
- Building Construction by W. B. Mckay
- Building Construction by Sushil Kumar
- Building Construction by Rangwala
- Engineering Materials by Rangwala
- Building Construction by B. C. Punmia
- Building Materials: Materials of Construction by Gurcharan Singh
- Building Construction Handbook, R. Chudely
- Other learning resources as and when recommended by the faculty

*** Each module should include market surveys and construction site visits compulsorily.**

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020105	Architectural Graphics-II	4	1	0	2	1

Course Overview:

- Architectural Graphics-II intends to develop essential manual skills such as proficiency in drawing, largely used as primary mode of communication of ideas in architectural design. Students will be introduced to a variety of tools and techniques for visual expression with emphasis on manual drawing.
- A continuation of Architectural Graphics-I, Architectural Graphics-II intends to introduce the students to various essentials of architectural drawings such as principles, tools and techniques for communicating design ideas.
- The course would help students identify suitable methods of representation and methods in different built environment scenarios.
- Architectural Graphics-II, ffamiliarize students to three dimensional drawings/objects and its application used to enhance and communicating design ideas. Introduces advanced techniques for architectural drawing such as perspective projection, mix-media renderings etc. The course would help students identify suitable methods of representation and methods in different built environment scenarios.
- Development of surfaces to develop understanding of 2-dimensional drawings and 3-dimensional models.
- The subject will be taught is congruence with the Design studio, and assignments for the subject will be linked to the design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Outcomes:

Domain	Category	Outcome
Psychomotor	Articulation	To **integrate** the 2-dimensional drawings and 3-dimension form using development of surfaces
Psychomotor	Articulation	To **formulate** the 2 dimensions into 3-dimension drawing using metric projection
Cognitive	Remembering	To **Recognize** the need to combine the use of manual drawing tools and techniques for drafting and freehand drawing for architectural design communication
Cognitive	Applying	To **Apply** the projected drawing method of exterior and interior perspective
Cognitive	Applying	To **Construct** one- and two-point perspective drawings from floor plans and elevations
Cognitive	Application	To **Produce** by Drawing/sketching 3- Dimensional Architectural drawings using and freehand techniques.
Psychomotor	Precision	To **Demonstrate** an understanding of furniture, people and accessories in one- and two-point projected perspective drawing.
Psychomotor	Construct	To **Construct** conceptual and presentation drawings as a design presentation tool for various purposes

Module 1	Introduction to 3D Metric Drawing- **Architectural Drawing Techniques**
	Learning Objectives • To draw architectural 3-dimensional drawings in metric projections and discuss the benefits of perspective projections over metric projections.
	Module Contents • Types of architectural drawings and their advantages.

	• Isometric, Axonometric & Oblique view • Metric drawings, projections and their dimensions • Difference between perspective and metric projections
Module 2	**Development of Surfaces**
	Learning Objectives To draw and fold at the required positions to prepare the 2- dimension shape into 3- dimension model
	Module Contents • Introduction to development of surfaces and its uses. • Methods of development of surfaces • Development of lateral surfaces of simple solids as cube, cone, pyramids and prism. • Development of complex solids, when two or more simple solids are joined together.
Module 3	**Perspective drawings: Exterior with Sciography**
	Module Contents • Anatomy of perspective: Station point, Eye level, Cone of vision, Picture plane, Horizon line, Ground line, Vanishing points. • Types of perspectives: One point, Two-point, Three point • 2-point perspectives of building exterior • 3-point perspectives of simple architectural forms • Sociography in perspectives
Module 4	**Perspective drawings of interior spaces**
	Module Contents • One point and two points perspectives of interiors • Perspectives of simple household furniture items
Module 5	**Perspective drawing by innovative methods**
	Module Contents • Preparation of Perspective by innovative methods like approximate method, Diagonal Method, Grid Method etc. Other innovative methods of perspective presentation. • Introduction to shortcut methods in perspective drawing.
Module 6	**Freehand presentations and rendering techniques**
	Learning Objectives • Sketch using freehand techniques • Draw views demonstrating the play of light and shadows. • Demonstrate use of various presentation mediums
	Module Contents • Freehand perspective sketching. Rendering, shades and shadows. • Introduction to represent different textures and finishes in plan and elevation of interior and exterior spaces. • Graphical representation of furniture, automobiles, human figures, etc. in plans and elevations and 3-dimensions. • Techniques Colouring of architectural presentation drawings in various medium • Monochromatic shades, Shades and shadows in multi-coloured drawings

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References & Learning Strategy

*** Lecture, Models, Presentation and Videos are among the few strategies that may be adopted for the teaching-learning process.**

- This course employs a lab strategy where instructor introduces, demonstrates use of a tool/techniques. Students are supervised on a one-to-one basis. Primarily stress is given to skill development by hands-on experience with support of reference material.
- Architectural Graphics, 4th Edition by Francis D.K. Ching
- Design Drawing by Francis D.K. Ching
- Other learning resources as and when recommended by the faculty

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020102	Surveying & Levelling	2	1	0	1	0

Course Overview:

- The Surveying & Leveling of potential site/ land is essentially required to understand the ground situation before preparing an architectural design of any type of structure.
- The survey maps will be foundation documents for selection of technique of design based on ground elevation and contour pattern of proposed site.
- This subject covers the conceptual theory and practical application of surveying and leveling on ground with help of various survey concepts, techniques, methods and instruments.
- The subject will be taught is congruence with the Design studio, and assignments for the subject will be linked to the design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Outcomes:

The course will equip the students to understand the role of surveying and leveling in architecture and introduce to the techniques and equipment's for land surveying.

Module 1: Introduction to surveying

Learning Objectives

- Enable the students to understand land topography and its connection with surveying & leveling exercises.
- Types of surveys in practice and overview of various survey techniques & equipment.

Learning Resources / References & Learning Strategy

- Based on the knowledge acquired the student should be able to identify and determine the relevance of surveying in Architecture.

Module Contents

- Concept of surveying & levelling and its tactical importance for Architecture profession
- Overview and classification of various survey techniques & equipment.
- Scaling of survey measurements and Errors in Surveying
- Concept of Trigonometry, Traversing & Tacheometry in Surveying

Module 2: Elementary Surveying Techniques

Learning Objectives

- Enable the students to understand the primary basic surveying techniques adopted in past years

Learning Resources / References & Learning Strategy

- History of evolution of surveying from elementary techniques

Module Contents

- **Chain Surveying:** Principles of survey, equipment required selection of station, methods of taking offsets. Booking the field notes, obstacles in chaining, errors in chaining, chaining on sloping ground and reciprocal ranging.
- **Compass Surveying:** The prismatic compass, its construction and uses. Other types of compasses. Reduced and whole circle bearing, magnetic declamation, effects of local attraction. Compass traverse and balancing the closing error.

Module 3: Conventional Surveying Techniques

Learning Objectives

- Enable the students to understand the conventional surveying techniques adopted in past years

Learning Resources / References & Learning Strategy

- History of evolution of surveying from elementary techniques to new age modern conventional techniques

Module Contents

- Plane Table Surveying: Equipments, methods, advantage & disadvantage, errors etc.
- Theodolite Surveying: Theodolite's temporary & permanent adjustment, measuring of magnetic bearings, horizontal & vertical angles. Theodolite traverse & balancing closing error.
- Tachometric Surveying: General instruments, different systems of tachometric measurements, stadia method, Subtense method.

Module 4: Levelling & Contours

Learning Objectives

- Enable the students to understand basics of levelling with various instruments & methods and concept of contouring.

Learning Resources / References & Learning Strategy

- Role of elevations and determination of levels at various surface patterns

Module Contents

- Levelling: Different types of levels, their temporary and permanent adjustment, levelling staff. Book of the readings and reduction of levels. Errors in levelling. Curvature and refraction reciprocal levelling profile, levelling cross sections.
- Contouring: Characteristics of contour lines, direct and indirect methods of contouring and interpolation of contours. Interpretation and preparation of contour maps.

Module 5: Advance Survey Techniques

Learning Objectives

- Enable the student to understand the concept of **Total Station Survey** and its multi-functioning in surveying.
- Use of satellite for measurements of survey points with help of **DGPS**

Learning Resources / References & Learning Strategy

- Combine measurement of coordinates and distances with digital technology
- Understanding of latest satellite-based survey techniques to overcome the limitation of conventional surveys techniques

Module Contents

- Limitations of traditional surveys techniques, limitations of DBMS and CAD packages
- Site modelling with total station survey (TSS) and exercises in setting out of building works.
- Measurements of coordinates and elevations of objects from various points and minimising the errors with traversing with TSS
- Introduction to Remote sensing & GIS- concept and definition,
- Concept of DGPS and its applications & Site modelling with DGPS

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References

- Surveying And Surveying (Volume I & II) by Dr. B. C. Punmia, Ashok Jain, Arun K. Jain
- Elementary Engineering Surveying by J. K. Ghosh
- Surveying And Levelling for Architects by Prof. Harbhajan Singh
- Online Latest Manual on Application of Land Surveying Instruments, i. e. Total Station Survey, DGPS etc.
- Other learning resources as and when recommended by the faculty.

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020104	Strength of Materials	2	1	1	0	0

Course Overview:

- Understanding the basic principles of structural mechanics that would be pertinent to simple design elements and understanding the structural behavior of buildings.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Remembering	**Develop** understanding of shear and bending stresses in Trusses.
Cognitive	Remembering	**Calculate** of Shear stress distribution in various sections
Cognitive	Understanding	**Calculate** deflection in beams through analytical method
Cognitive	Understanding	**Develop** understanding various equation of column design

Module 1	**Simple Stresses in trusses**
	Learning Objectives • Study of stresses and strains and their effect in various elements of trusses.
	Module Contents • Forces in members- analytical method • Method of joints • Method of sections
Module 2	**Bending Stresses**
	Learning Objectives • Study of bending moment and their effect in various elements of trusses.
	Module Contents • Bending equation • Bending stresses in symmetrical and unsymmetrical sections
Module 3	**Shear Stress**
	Learning Objectives • Analytical method for determining shear stresses in various section of building structure.
	Module Contents • Introduction • Shear stress distribution in various sections.
Module 4	**Deflection of Beams**
	Learning Objectives • Analytical method for determining deflection in various sections of building structure.
	Module Contents • Differential Equation of deflected beam.

	• Double Integration method, • Macaulay's method. • Statically determinate beams and propped Cantilever. • Moment Area Method. • Conjugate beam method.
Module 5	**Column and Struts**
	Learning Objectives • Understanding various equations to design columns.
	Module Contents • End conditions • Effective length • Slenderness ratio. • Euler's formula

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning References/Resources

- IS Code 465: 2000.
- Strength Of Materials by Dr. R.K. Bansal
- Strength Of Materials by R.S. Khurmi
- Engineering Mechnaics by R.S. Khurmi
- Structure II by Bhavikutti
- Other learning resources as and when recommended by the faculty

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Core Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020106	History of Architecture - I	2	1	1	0	0

Course Overview

- The architecture of the world can be categorised as per the timeline of the respective regions of the world with the rock shelters and ancient civilisations of the world with a theoretical framework and the prominent people of architecture who have significantly contributed in the establishment of major distinct architectural styles and features thereby, resulting in a holistic approach and comprehensive and exhaustive analysis of the world architecture.
- All the modules of this course should be studied by discussing the following features first before discussion of architecture/building types:
- Geography of Building Materials/Resources
- Methods of Construction
- Sociological Background- Degree of Dominance of Religious/Political/ Economical class.
- **Design Connectivity** – The understanding of space development and structural quality-based design approach would enable students to design smaller basic structures / houses with applicable structural principles and construction techniques in mind. Innovation in the use of conventional material in non-conventional way, as portrayed in the landmark historic buildings, would also help students to think out of the box.

Course Outcomes

Domain	Category	Outcome
Cognitive	Remembering	**Identify** different styles of historic architecture.
Cognitive	Remembering	**Identify** prominent / important historic buildings by their components / style of design
Cognitive	Remembering	**Describe** prominent / important historic buildings
Cognitive	Analyzing	**Analyze** the contributing factors for the design development of different styles.
Cognitive	Analyzing	**Compare and Contrast** various styles on the basis of the contributing factors responsible for their development
Cognitive	Creating	**Design** buildings in the historic architectural styles.

Module 1 — **Introduction to Mesopotamian and Egyptian Architecture**

Module Contents

- Introduction to Mesopotamian civilizations, their social systems and cultures
- Salient building types – Mesopotamian:
  - Ziggurats and their development – White Temple, Ziggurat of Ur, Urnammu and Khorsabad
  - Generic Temple Layout - Temple Oval and Khafaje
  - Palace Complex/Citadel of Khorsabad, Nebuchadnezzar's Babylon, Persepolis
- Introduction to Egyptian civilization, their social systems and cultures
- Salient building types – Egyptian:
  - Temples & temple complexes - Cult Temple and Mortuary Temple

	○ Mastaba – development and typical components ○ Pyramids – Complex of Zoser, Pyramid of Cheops and Cephren, Standard mortuary complex layout of pyramids
Module 2	**Greek Architecture**
	Module Contents • Introduction to Greek civilization, their social systems and cultures • Classical Order – Doric, Ionic, Corinthian • Salient building types: ○ Temple types on basis of column layout – case example of Acropolis, Athens ○ Discussion of Hellenic Temple (Parthenon, Athens) versus Hellenistic Temple (Athena Polias, Priene) ○ Public Buildings and Square – Agora, Stoa, Prytaneum, Bouleuterion, Tholos, Gymnasium, Theatre
Module 3	**Roman Architecture**
	Module Contents • Introduction to Roman civilization, their social systems and cultures • Contribution in new materials and new construction/structural systems, eg, Pozzolana, Cement, Stone Blocks, Stone Masonry, Arch, Vault, Dome • Salient buildings: ○ Forums of Rome ○ Pantheon ○ Aqueduct ○ Colosseum ○ Bath of Caracalla ○ Basilica of Trajan
Module 4	**Early Christian & Romanesque Architecture**
	Module Contents • Introduction to society and culture of 400 -1150 AD in Europe • Early Christian Architecture ○ Development of Early Christian Church from Roman Basilica ○ Salient building – St. Peter's Basilica • Romanesque Architecture ○ Development of Romanesque architecture from Early Christian architecture
Module 5	**Byzantine Architecture**
	Module Contents • Contribution of Byzantine architecture in the development of structural system – dome construction over square plan, • Adoption of Greek cross in church layout • Use of mosaic and mural in interior • Salient buildings – Santa Sophia, Istanbul; St. Mark's Cathedral, Venice
Module 6	**Gothic Architecture**
	Module Contents • Introduction to society and culture of 1150 – 1350 AD in Europe • Development of Gothic church and its new elements:

	○ Pointed Arch window ○ Different arch types – lancet, equilateral, depressed ○ Trefoil arch ○ Cluster column and intersecting vault roof ○ Clerestory window and triforium ○ Flying buttress ○ Glazed window, stone and metal trellis, flamboyant window, rose window ○ Entrance of church • Salient buildings: ○ Cathedrals of St. Dennis, ○ Cathedrals of Chartres, ○ Cathedrals of Notre Dame (Paris) ○ Cathedrals of Reims
Module 7	**Basic Introduction to Renaissance Architecture and its Classical Revivalism, Neo-Classicism**
	Module Contents • Introduction to society and culture of 1400 -1800 AD • Division of Renaissance architecture into Early, Mature and Late periods. • Contribution in structural system, e.g., ribbed dome, lantern dome • Revival of classical orders and principles – Neo-Classicism

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References & Learning Strategy

- History of Architecture by Sir Bannister Fletcher
- The Story of Architecture by Patrick Nuttgens
- Space, Time and Architecture by Siegfried Gideon
- Other learning resources as and when recommended by the faculty

SCHOOL OF PLANNING & ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

Subgroup: Compulsory Non-Credit Course

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
02	BARC-020008	General Proficiency	0	0	0	0	0

Course Overview:

In the ever-evolving landscape of education, it has become increasingly important to equip students with essential skills for the holistic development that go beyond academic knowledge. Such skills help students prepare for the challenges of the modern world. The objectives of this non-credit compulsory course are:

- To encourage students to participate in various co- curricular and extra-curricular activities in the institute.
- To encourage students to participate in the extra-curricular activities outside the institute.
- To realize the value of the holistic development of an individual by broadening their horizons and by nurturing their creativity, leadership qualities, emotional intelligence, problem solving skills and resilience.
- To help develop the values like physical, psychological, ethical, academic, civic, social, aesthetic, cultural, recreational, and disciplinary values.

The student's achievement shall be evaluated based on his/her performance in various extracurricular and co-curricular activities besides academic excellence.

Course Outcomes:

Domain	Category	Outcome
Cognitive	Explore	To identify the extra-curricular activity in which the students would like to participate in.
Cognitive	Understanding	To comprehend the knowledge in fields associated with the chosen activity.
Psychomotor	Demonstrate	To demonstrate the learnt skill/knowledge in the chosen activity.
Affective	Characterization	To resolve the domain of learning and internalize it for personal growth and self-improvement.

Suggestive co-curricular and extra-curricular activities:

Publication	Participation and presentation	Intra-Institute Activities	Inter-Institute Activities	Awards	Marks for Each Activity
Paper publication in international peer reviewed, SCOPUS indexed journal.		Administrative/managerial/student council responsibilities in the institute.		Awards in Design and Essay Competitions, Papers Publication, Sports Events, NASA, Fellowships, and other activities outside the institute	30
Paper publication in peer -reviewed national journal. Paper publications national and international conference and seminar	Paper presentation in (national and international) conference/seminar	Engage in the core-team of the coordination of Hostel, Mess, Students Club, Council Election or Editor of Institute's Newsletter.	Participation in collaborative Studio/NASA/ZONASA/Inter College Sports Competition/Design Competition/Essay Competition/Inter		25

Editing a publication.			Institute Festivals etc.		
Paper publication in newsletter/ other publications.	Participation in (national and international) conference/seminar/ workshops /hands-on workshop/GIAN – 20 marks	To be part of the organizing team related with institute events/cultural events/hostel/sports/ Institutes website/ students' club and other student activities. Participation in Integrated Studio/NASA/ Design Competition/Essay Competition Engagement with NCC/ Unnat Bharat Abhiyan/ Institute's Innovation Council and Others in the institute.			20
News article publication in newsletter/newspaper/ blog etc.		Participate in sports, cultural activities, club activities, plantation drive etc. Volunteering for an institute activity or work with faculty members for an institute activity.			15
Any other related activity	Any other related activity	Any other related activity	Any other related activity	Any other related activity	10

Evaluation:

The students are required to choose the activities of their choice during the semester. Students are required to demonstrate and produce their proof of participation/ achievements as per the list provided above, with the Evaluation Committee at the time of the End Term Examination. They will be evaluated in 100 marks. All those who will get more than 100 marks, will get full marks. This is a non-credit course; however the grades will be reflected in the students' grade cards.

SCHOOL OF PLANNING AND ARCHITECTURE, BHOPAL

DEPARTMENT OF ARCHITECTURE

BACHELOR OF ARCHITECTURE PROGRAMME CURRICULUM JULY 2024

FIRST AND SECOND SEMESTER ELECTIVE COURSES

Subgroup: Elective Courses

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01&02	BARC-0101E1/ BARC-0201E1	A. Documentation and Hands-on Workshop	2	1	0	1	0

Course Overview

- The aim of this subject is to familiarize students with different types of materials and manufacturing techniques for creating art forms/ models.
- Students will be able to use different kinds of tools and machinery for production of design models.
- The students will be able to appreciate and analyse existing built structures through documentation
- The subject will be taught in congruence with subjects like Design and Graphics.
- Assignments for the subject will be linked to design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Outcomes

Domain	Category	Outcome
Cognitive	Sensitize	To sensitize the usage of various materials for production of art work
Psychomotor	Apply	To apply different mediums and machine tools for production various types of art work
Psychomotor	Apply	To create art forms with different mediums

Module 1	**Development of Art and Craft Skills (manual skills)**
	Module Contents • Introduction to different hand tools and their process • Rules, safely and precautions • Learning the usage of various materials in 2D and 3D art work • Create an art work with the above materials by hand. • Thermal stresses in composite bars • Elongation of bar due to its own weight • Analysis bar of uniform strength Suggestive Materials Materials like paper, Thermocol, clay, ceramic, plastic sheet, sheet metal, wood etc.
Module 2	**Application of Manual and Automated Tools in Artwork**
	Module Contents • Learning to handle machine tools • Application of machine tools for art work Suggestive Material: Plastic sheet, Sheet metal, Wood
Module 3	**Art Work in Design**
	Module Contents Study of application of art work in design field Creation of art work for design presentation
Module 4	**Art Work in Built Environment**
	Module Contents • Study of application of art work in built environment

	• Creation of art work for Architectural presentation Students can explore any material related to architectural built environment to various assignments unless specified by instructor
Module 5	**Architectural Documentation**
	Module Contents • Familiarize students with the tools of documentation. • Document and develop an architectural scaled drawing of an existing building or structure using direct or indirect measurements on site • Appreciate and analyze 3-dimentional built structure in the respective socio-cultural context
Module 6	**Exhibition and evaluation**
	Module Contents • Discuss and debate by presentation. • Design of exhibition for art work and building documentation

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

All the above modules will be evaluated in the form of verbal or written presentation of art work, drawing work, model making, photography, etc

Learning Resources / References

- The complete book of drawing techniques, by Eugene Felder & Emmett Elvin
- Paper Scissor Glue by Catherine Norman, Ryland Peters & Small
- Discover Origami by Rick Beech Paper Scissor Glue by Catherine Norman, Ryland Peters & Small
- Color on Metal by Tim Mc Creight & Nicole Bsullak
- The Art of Polymer Clay by Donna Kato & Natson Guptil
- Measure Drawing for Architects by Robert Chitham
- Other learning resources as and when recommended by the faculty

Subgroup: Elective Courses

Sem	Course Code	Course Title	Credit	L	T	P/S	D
01&02	BARC-0101E1/ BARC-0201E1	B. Architectural Photography	2	1	1	0	0

Course Overview

- This course explores the specialized field of architectural photography, focusing on capturing the essence and aesthetics of buildings and structures. Students will learn the technical skills required for architectural photography, understand the principles of composition and lighting, and appreciate the historical and cultural significance of architectural photography.
- The students will
  - Understand the significance of architectural photography.
  - Develop technical skills specific to photographing buildings, interiors and structures.
  - Apply principles of composition and lighting in architectural photography
  - Analyze and critique architectural photographs.

Course Outcomes

Domain	Category	Outcome
Cognitive	Remembering	Recall key concepts, terminology, and historical developments in architectural photography
Psychomotor	Understanding	Explain the technical and aesthetic principles of architectural photography
Psychomotor	Applying	Utilize camera settings and techniques to photograph buildings and structures effectively
Psychomotor	Analyzing	Evaluate the compositional and technical elements of architectural photographs
Cognitive	Evaluating	Critically assess architectural photographs and provide constructive feedback
Cognitive	Creating	Produce a cohesive portfolio of original architectural photographs

Module 1:	**Introduction to Architectural Photography**
	Module Contents • History and evolution of architectural photography. • Overview of architectural photography principles.
Module 2	**Equipment and Techniques**
	Module Contents • Camera settings, lenses, and other equipment for architectural photography. • Hands-on practice with camera settings and equipment. • Take photos of a local building using different camera settings.
Module 3	**Composition in Architectural Photography**
	Module Contents • Principles of composition specific to architecture (lines, symmetry, perspective). • Compositional exercises. • Compose and photograph a building focusing on compositional technique
Module 4	**Lighting and Exposure**
	• Natural and artificial lighting in architectural photography • Practical exercises with different lighting conditions

	• Capture a building at different times of day to study lighting effects
Module 5	**Exterior Architectural Photography**
	• Techniques for capturing building exteriors • Fieldwork focusing on exterior photography • Photo series of building exteriors with attention to detail and context
Module 6	**Post-Processing for Architectural Photography**
	• Editing techniques to enhance architectural photographs • Editing exercises using digital software **Assignment**: Edit a series of architectural photos to improve clarity and composition
Module 7	**Interior Architectural Photography**
	• Challenges and techniques for photographing interiors. • Practical exercises in interior settings. **Assignment**: Photograph interior spaces focusing on light, space, and design elements.
Module 8	**Architectural Photography Genres**
	• Various genres within architectural photography (historical, contemporary, urban). • Experiment with different genres. **Assignment**: Create a mini-portfolio with examples from different architectural genres.
Module 9	**Critique and Analysis & Portfolio Development**
	• Critique peer work focusing on composition, technique, and artistic vision • Provide constructive feedback • Compile and refine a portfolio of original architectural photographs **Assignment**: Written critique of a peer's architectural photo series. Final portfolio submission

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References

- Learning resources as and when recommended by the faculty

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Subgroup: Elective Courses

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01&02	BARC-0101E1/ BARC-0201E1	C. **Communication Skills**	2	1	1	0	0

Course Overview

- The course intends to build the required communication skills of the students having limited communicative abilities, so that they may communicate effectively in real-life situations.
- This will help the students to equip themselves for better performance in all subjects that require verbal communication and written explanations.

Course Outcomes

Domain	Category	
Cognitive	Remembering	**Identifies** the important aspects on verbal communication
Cognitive	Understanding	**Recognizes** common errors in verbal and written skills.
Cognitive	Understanding	**Compares** differences in intents within communication
Cognitive	Understanding	**Paraphrase** the written documents and verbally
Cognitive	Applying	**Role-play** based on different situations
Cognitive	Evaluating	**Interprets** the verbal and non-verbal communications
Affective	Characterization by a value or value set	Able to **revise** judgments and change behavior in light of new evidence

Module 1	**Understanding the basics of communication skills**
	Module Contents • Scope and Importance of communication • Listening, Speaking- 2 important parts of communication • Reading & Writing
	Learning Resources / References & Learning Strategy Ice-breaking Exercises, practicing accents, exercises on listening skill, and exercises on writing skills.
Module 2	**Command on simple grammar and building up vocabulary**
	Module Contents • Time and Tense, Agreement, Active-Passive, Narration, • Use of Determiners, Prepositions & Phrasal Verbs • Word-formation, Synonyms, Antonyms, Homonyms, One-word Substitutes, Idioms and Phrases. Collocations, Abbreviations of Scientific and Technical Words
	Learning Resources / References & Learning Strategy Assignments on Time and Tense, Agreement, Active-Passive
Module 3	**Introduction to sounds and science of speaking**
	Module Contents • Organs of Speech, Place and Manner of Articulation, Stress & Intonation,

	• Listening Comprehension (Practical Sessions in Language Laboratory) • Countering Stage-fright and Related Barriers to Communication.
	Learning Resources / References & Learning Strategy Laboratory Session on Narration, Use of Determiners, Prepositions & Phrasal Verbs, Revisionary Exercises & Quiz
Module 4	**Soft Skills**
	Module Contents • Interpersonal Communication. • Verbal & Non-verbal communication, Body language, Persuasion. • Negotiation, Neuro-Linguistic Programming
	Learning Resources / References & Learning Strategy Non-Verbal Communication in Cross-Cultural Situations, Case Studies. Assignments on E-mail Etiquette, Social Networking, Blog Writing, Discussions on Current Issues
Module 5	**Communication and media (social and popular)**
	Module Contents • The Social and Political Context of Communication • Recent Developments and Current Debates in Media
	Learning Resources / References & Learning Strategy Group Discussions and Readings on Topics Related to Race, Ethnicity, and Diaspora
Module 6	**Rhetoric and public communication**
	Module Contents Audience Awareness, Emotionality, public speech.
	Learning Resources / References & Learning Strategy Individual Presentations (Audience Awareness, Delivery and Content of Presentation)

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References & Learning Strategy

- A Practice Course in English Pronunciation by J. Sethi, J & et al.
- Communication Skills by Leena Sen.
- Communication Skills by P. Prasad
- Spoken English, Orient Language by R. K. Bansal and J.B. Harrison.
- English Phonetics and Phonology by Peter Roach
- Oxford Advanced Learners Dictionary of Current English by A.S. Hornby.
- The Functional Aspects of Communication Skills by P. Prasad
- Other learning resources as and when recommended by the faculty

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Subgroup: Elective Courses

Sem.	Course Code	Course Title	Credit	L	T	P/S	D
01&02	BARC-0101E1/ BARC-0201E1	D. **Physical Model Making**	2	1	0	1	0

Course Overview

- The course intends to enable students learn the types and techniques of making physical models.
- This course will also enable students to understand what type of model serves which purpose in the profession of architecture.
- This will help students to provide a tangible representation of their design.
- This will encourage students to experiment with the three-dimensional form and composition.
- This will enable students to establishment a better communication and understanding of their design with the faculty / reviewer / client.

Course Outcomes

Domain	Category	
Cognitive	Remembering	**Identifies** different types of physical models and the materials to construct them
Cognitive	Understanding	**Compares** different models and their uses
Cognitive	Understanding	**Recognizes** materials to make models and how to use them
Psycho-motor	Precision	**Precise** handling and cutting/ modification of materials
Psycho-motor	Manipulation	**Compositing** various components of a physical model
Psycho-motor	Naturalization	**Finishing** of models with site and landscaping to represent the design

Module 1

Introduction to Physical Model and its purposes

Module Contents

- Introduction to physical model and their utility
- Types of physical models and their scales
- Introduction to various materials – polystyrene foam, paper, types of wood, plex-glass, cork sheet and others deemed suitable by the instructor.
- Introduction to tools and machines for model making.

Learning Resources / References & Learning Strategy

Interactive lecture, introduction to materials and tools with actual samples, showcasing of some types of models through photographs or actual models (if available).

Module 2

Preparation of Basic 3D Blocks through Surface Development

Module Contents

- Concept of surface development introduced through drafting of a couple of sheets.
- Preparation of surface development of few basic solids – pyramid, cube, parallelopiped, cylinder and sphere.
- Surface development of a composite 3D composition introduced by the instructor

Learning Resources / References & Learning Strategy

Hands-on classes with actual materials and tools, Practice assignments

Module 3

Block Model

Module Contents

- Understanding the purpose of block model as initial study of the design development.
- Choice of suitable scale of block model
- Preparation of block model by cutting polystyrene foam (thermocol), soap-bar, etc; or by surface development.

	• Preparation of basic site for placing the blocks
	Learning Resources / References & Learning Strategy Hands-on classes with actual materials and tools, Practice assignments
Module 4	**Detailed Model**
	Module Contents • Introduction to detailed model and understanding its purpose. • Choice of scale for the detailed model and decision on the extent of detailing to be done. • Preparation of detailed model of a small residence by skeleton and surface development process. • Preparation of detailed model with the help of laser cutter machine (optional)
	Learning Resources / References & Learning Strategy Hands-on classes with actual materials and tools, Practice assignments
Module 5	**Roof-Open / Interactive Model**
	Module Contents • Introduction to a roof open model and understanding its purpose. • Learning to decide the extent of "interactive" a model can be depending on its use • Preparation of a roof open model of a small residence.
	Learning Resources / References & Learning Strategy Hands-on classes with actual materials and tools, Practice assignments, Workshop by expert(s)
Module 6	**Site / Contour Model**
	Module Contents • Understanding the purpose of detailed site model with landscaping. • Introduction to contour and the importance of showing to-the-scale contour differences in a physical model • Introduction to various material. • Preparation of a detailed landscaped contoured site model (for the detailed residence block prepared under module 4 or 5).
	Learning Resources / References & Learning Strategy Hands-on classes with actual materials and tools, Practice assignments

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References & Learning Strategy

- Werner, Megan (2011). Model Making. New York, USA: Princeton Architectural Press
- Criss, B.M. (2011). Designing with Models: A Studio Guide to Architectural Process Models. John Wiley and Sons.
- Werner, M. (2011). Model Making. New York. Princeton Architectural Press
- Rodgers, P. and Milton, A. (2011). Product Design. London. Laurence King Publishing.
- Bhatt, N.D. (2012). Engineering Drawing: Plane and Solid Geometry. Charotar Publishing House
- Other learning resources as and when recommended by the faculty

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Subgroup: Elective Courses

Sem	Course Code	Course Title	Credit	L	T	P/S	D
01&02	BARC-0101E1/ BARC-0201E1	E. Skill Based Flexible Elective by Department	2	1	1	0	0

Course Overview

- Skill-based flexible electives can greatly enhance a student's learning by providing them with the opportunity to develop specialized skills and knowledge that are valuable in the field of architecture. These electives can cover a wide range of topics from architecture and allied fields, allowing students to tailor their education to their interests and career goals.
- These electives can focus (but not limited to) on basic digital tools, design principles, and introductory topics in architecture and related fields like video making, dramatics, Augmented Reality and Virtual Reality etc. . Here are some suggested skill-based flexible electives for first-year B.Arch students:

1. Introduction to Digital Design Tools
2. Fundamentals of Architectural Drawing
3. Introduction to Sustainable Design
4. Basic Construction Techniques
5. Elements and Spaces
6. Behavioural Architecture
7. Ergonomics and Accessibility
8. Video Making
9. Animation
10. Augmented Reality (AR) and Virtual Reality (VR)

This is not an exhaustive list and can be modified by the instructor with emerging techniques relevant to architecture or areas related with ongoing research projects in Department of Architecture.

Course Outcomes

Skill-based flexible electives will introduce foundational skills and concepts that will support students' development throughout the B.Arch. program.

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments	50%
End term Examination	50%

Learning Resources / References

- Learning resources as and when recommended by the faculty

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Subgroup: Elective Course

Sem	Course Code	Course Title	Credit	L	T	P/S	D
01&02	BARC-0101E1/ BARC-0201E1	E. MOOC/Swayam/NPTEL	2	1	1	0	0

Course Overview

- The objective of the elective subject is to help students acquire knowledge by direct involvement in diverse forms of online academic programs. This would enable students to explore the possibility of taking courses not regularly offered in B.Arch. programs.
- The objective of this elective is to encourage students participate in multidisciplinary courses outside institute to acquire knowledge of various fields which contributes to the profession of architecture.
- The students have the flexibility to take any online skill development courses of their choice.

Course Outcomes

Domain	Category	Outcome
Cognitive	Explore	To identify the skill based online course for the study
Psychomotor	Demonstrate	To comprehend the requirements of the skill based course, complete the assignments and other evaluations for successful completion of the chosen online course.
Psychomotor	Demonstrate	To demonstrate the learnt skill and its link to architecture
Affective	Characterization	To resolve the domain of learning and internalize it for the profession of architecture

Module 1	**Exploration and Identification of Creative Fields**
	Module Contents To explore allied disciplines which will contribute to the profession of Architecture. The fields can be like any of the listed below: o Photography o Building Construction Techniques o Graphic Design o Textile design o Arts and Crafts (Stone Art, Bamboo, Ceramic, Origami, Calligraphy, etc.,) o Video and Film Making o Animation o Research Paper writing o Advanced Computer Application courses o GIS o Architectural Journalism This is just a suggestive list. The students are free to explore other allied areas which should be approved by the faculty coordinator.
Module 2	**Acquiring the Skill/ Knowledge**
	Module Contents • To undergo the coursework/workshop • To document the process of the course undergone • To prepare a report/ portfolio of the work done
Module 3	Demonstration of the Acquired Skill/Knowledge
	Module Contents • To demonstrate the learning's of the course

	• To present the work in a forum

Criteria for choosing the elective:

- Courses opted for should be certified by recognized universities/forums like MOOC/Swayam/NPTEL
- For the above, prior discussion, selection of the course needs to be done in consultation with the subject coordinator (s).

Evaluation: Distribution of % of marks

Internal Progressive Evaluation of assignments; based on the regular reviews of the chosen course	50%
End term Examination/VV; based on the final review of the chosen course	50%