

## First Year First Semester

### 1. Architecture Design – I (Code - 210112)

#### Objectives –

The course aims to obtain the fundamentals of design – elements and principles that govern the aesthetic aspects of design, experimental understanding of graphic elements and compositions in 2D / 3D, experimental understanding of colours, textures and compositions. Experimental understanding of form building, experimental understanding of design.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/Online)
				Theory Slot				Practical Slot					L	T	P			
				End Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation									
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional		Lab work & Sessional	Skill based mini project								
1.	210112	Architectural Design – I	DC-1	100	20	20	20	50	30	10	250	7	2	3	2*(1.5)	8	AO	Offline**

#### UNIT-1 GRAPHIC ELEMENTS, COMPOSITIONS & COLOURS – 2D

Impart elements and principles of design theory with sample exercises supported by illustrative PowerPoint presentations. Exercises: Dots, lines, shapes & forms, hatching patterns, 2D compositions with geometric & organic shapes and Impart colour theory with sample exercises supported by illustrative PowerPoint presentations, colour compositions on 2d compositions, textures replacing colors.

#### UNIT-2 3-D COMPOSITIONS / COLOUR & TEXTURE APPLICATIONS

Texture portfolio, 3D compositions with geometric & organic forms (model), Color compositions on 3D compositions (model), Texture applications & material compositions (model)

#### UNIT-3 2-D & 3-D ABSTRACTIONS

2-D image abstraction (colour, black/white, grey tone/mono colour, textures), 3-D image abstraction (colour, black/white, grey tone/mono colour, texture), 3-D model abstraction (colour)

#### UNIT-4 FORM BUILDING (MODELS)

Make a vivid PowerPoint presentation / video presentation on form building models with ample samples.

Exercises: 3-D sculpture exercises (additive & subtractive forms – solids & voids), Space frame model using a linear module (space creation), Origami models (space creation + solids & voids), Life scale models (group)

#### UNIT-5 PRODUCT DESIGN

Make a vivid PowerPoint presentation on product design with emphasis on user, purpose, material & form.

Exercises: Small scale product design, Life scale furniture design (group), 3-D model abstraction (colour).

**COs & LOs for Architecture Design – I**

**Overall Course Outcome:** The course aims to obtain the fundamentals of design – elements and principles that govern the aesthetic aspects of design, experimental understanding on graphic elements and compositions in 2D /3D, experimental understanding of colors, textures and compositions. Experimental understanding of form building, experimental understanding of design.

CO1	Students will be able to <b>develop</b> graphical understanding of visuals.	LO1	<b>Illustrate</b> the elements and composition of Design.
		LO2	<b>Apply</b> principle of design/additive & subtractive form (using 2d/ 3d compositions)
		LO3	<b>Illustrate</b> the color theory principles using color compositions & texture
		LO4	<b>Evaluate</b> the geometric & organic forms (2D & 3D in building)
		LO5	<b>Develop</b> analytical thinking towards spatial analyses of visual culture in 2-Dimensions.
CO2	Students will be able to <b>develop</b> understanding towards application of color and texture.	LO1	<b>Illustrate</b> the elements and composition of design in 3-D.
		LO2	<b>Apply</b> principle of design/additive & subtractive form (using 2d/ 3d compositions)
		LO3	<b>Illustrate</b> the color theory principles using color compositions & texture
		LO4	<b>Evaluate</b> the geometric & organic forms (2D & 3D in building)
		LO5	<b>Elaborate</b> analytical thinking towards spatial analyses of visual culture in 3D.
CO3	Students will be able to <b>illustrate</b> geometric and organic forms.	LO1	<b>Identify</b> the elements and principle of design theory
		LO2	<b>Associate</b> various graphical elements
		LO3	<b>Illustrate</b> the color theory principles using color compositions & texture
		LO4	<b>Distinguish</b> the geometric & organic forms (2D & 3D in building)
		LO5	<b>Elaborate</b> analytical thinking towards spatial analyses of visual culture
CO4	Students will be able to <b>create</b> building forms through model making.	LO1	<b>Identify</b> the elements and principle of design theory
		LO2	<b>Apply</b> principle of design/additive & subtractive form (using 2d/ 3d compositions)
		LO3	<b>Illustrate</b> the color theory principles using color compositions & texture
		LO4	<b>Categorize</b> the geometric & organic forms (2D & 3D in building)
		LO5	<b>Develop</b> analytical thinking towards spatial analyses of visual culture
CO5	Students will be able to <b>design</b> products with emphasis on user, purpose, material & form.	LO1	<b>Demonstrate</b> the elements and principle of design theory
		LO2	<b>Associate</b> various graphical elements
		LO3	<b>Illustrate</b> the color theory principles using color compositions & texture
		LO4	<b>Examine</b> the geometric & organic forms (2D & 3D in building)
		LO5	<b>Create</b> analytical thinking towards spatial analyses of visual culture

**REFERENCES:**

1. Charles Wallschlagger & Cynthia Busic-Snyder, Basic Visual Concepts and Principles for Artists, Architects and Designers, McGraw Hill, New York 1992.
2. V.S. Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Delhi, 1973.
3. Francis D.K. Ching - Architecture- Form Space and Order Van Nostrand Reinhold, Co., (Canada), 1979.
4. Elda Fezei, Henry Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
5. Exner. V, Pressel. D, Basics Spatial Design, Birkhanser, 2009

**Note: Five questions shall be asked. All questions may have equal or varied weightage in end semester exams.**

## 2. Building Materials (Code -210113)

### Objectives –

The course aims to obtain various materials and systems, their properties and applications, develop a fundamental understanding of the relationship of materiality to construction systems and techniques, the intrinsic relationship of building materials to structural systems and environmental performance.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/ Online)		
				Theory Slot				Practical Slot					End Sem. Exam	Continuous Evaluation	L				T	P
				End Term Evaluation		Continuous Evaluation		Lab work & Sessional	Skill based mini project											
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional													
2.	210113	Building Materials	BSAE-1	50	10	20	20	-	-	-	100	3	2	1	-	3	PP	Blended* (2/1)		

### UNIT-1 INTRODUCTION TO PRIMARY BUILDING MATERIALS

Historical evolution of building materials and construction methods. Clay and clay products (bricks, tiles), stones, timber, etc.

### UNIT-2 BAMBOO & TIMBER

Timber types, qualities, and defects in timber seasoning. Processed materials - plywood, laminates, fiberboards, lightweight boards, panels & timber products. Bamboo as plant classification, species, geographical distribution, Anatomy of Bamboo, Properties, strength, processing, harvesting, working of Bamboo tools – Treatment and preservation of Bamboo and uses of Bamboo. Termite protection, sewage protection, fire protection materials of special needs.

### UNIT-3 CEMENT AND OTHER RELATED MATERIALS.

Composition of cement, properties & various types of cement and their uses. Lime, sand, aggregate & mortar.

Special functional needs and categories of building materials abrasives, adhesives, asbestos, asphalt, bitumen, cork, electrical insulators, fuels, gypsum and heat insulation materials, lubricants, rubber sheets, roof coverings, and solders, sound absorb materials, tar and turpentine.

### UNIT-4 GLASS

Classification of glass, types of glass, physical properties and uses of glass in building industries, a special variety of glass and architectural glass.

### UNIT-5 PROPRIETARY BUILDING MATERIALS & OTHERS

Proprietary building materials: - Paints, Varnishes, distempers wallpaper, floor coverings, tiles, vinyl's, polyesters, fittings, furnishing materials for interiors & exteriors polymers, plastics resins and advanced surface finishes for interior and exterior. Industrial, agricultural and mineral wastes and their utilization as building materials: Fly ash, blast furnace slag, calcium carbonate, lime kiln rejects, by-product, gypsum, red mud, throw-away packages, rice husk, sawdust, wooden chips, choir waste, wood wool, tailings etc. their application in components of different types of buildings.

**Note:** Assignments should be in the form of small reports, market surveys, seminars and notes on above- mentioned topics. The works of CBRI, NBO, HUDCO, and other related institutions are referred to and discussed.

**COs & LOs for Building Material**

**Overall Course Outcome:** The course aims to obtain various materials and systems, their properties and applications, develop a fundamental understanding of the relationship of materiality to construction systems and techniques, the intrinsic relationship of building materials to structural systems and environmental performance.

CO1	Students will be able to <b>understand</b> the use of appropriate materials for building and construction.	LO1	<b>Learn</b> about different construction materials
		LO2	<b>Understand</b> the composition, properties and uses of various building materials.
		LO3	<b>Develop</b> a fundamental understanding it's application in building works.
		LO4	<b>Analyze</b> the building materials and its influence on prevailing architectural styles
		LO5	<b>Integrate</b> the market survey of different types of material
CO2	Students will be able to <b>understand</b> the detailing of building material and its applicability.	LO1	<b>Learn</b> Types of timber and it's processed materials.
		LO2	<b>Illustrate</b> specific use of materials and ascertain their application
		LO3	<b>Understand</b> the defects and treatment in timber seasoning.
		LO4	<b>Develop</b> an understanding of techniques used for it's application.
		LO5	<b>Integrate</b> the market survey of different types of material
CO3	Student will be able to <b>select</b> appropriate building materials based on properties, suitability, and it's application	LO1	<b>Remember</b> various types of building materials and their special functional needs.
		LO2	<b>Understand</b> their applicability, uses and their limitations
		LO3	<b>Analyze</b> their properties for their effective use in building construction works.
		LO4	<b>finalize</b> specific building materials for different types of buildings
		LO5	<b>Integrate</b> the market survey of different types of material
CO4	Students will be able to <b>understand</b> the structural component and glazing methods and how to make fenestrations delicate with it's appropriate usage.	LO1	<b>Understand</b> the different types of glass in the building industry.
		LO2	<b>Identify</b> suitable types of glass for use in field or Architecture.
		LO3	Develop understanding of its physical properties and varieties in buildings.
		LO4	<b>Analyze</b> specific use of glass and it's application techniques.
		LO5	<b>Integrate</b> the market survey of different types of material
CO5	Students will be able to <b>deal</b> with effective budgeting which will reduce the cost of construction through use of locally available materials along with improved skills and technology without sacrificing the strength, performance and life of the structure.	LO1	<b>Learn</b> Low cost Construction Techniques.
		LO2	<b>Analyze</b> building materials and its influence on prevailing architectural styles
		LO3	<b>finalize</b> specific building materials for different types of buildings
		LO4	<b>Consider</b> local material and its application techniques for low cost construction
		LO5	<b>Integrate</b> the market survey of different types of material

**TEXT BOOKS:**

1. S.C. RANGWALA, "Engineering Materials" Published 2012
2. S.P. ARORA & BINDRA, "Building Construction" Published Dec 2010

**REFERENCE BOOKS:**

1. Advances in Building Materials and Construction, CBRI.
2. Specification Yearbook

### 3. Graphics – I (Code –210114)

#### Objectives –

The course aims to obtain presentation skills, visual expression and representation, imaginative thinking and creativity through a hands on working with various mediums and materials, grammar of art by involving them in a series of free hand exercises both indoor and outdoor to understand form, proportion, scale, etc., exercises that look at graphic and abstract representations of art, concepts and fundamentals of Architectural Drawing, language of architecture & buildings as two dimensional and three dimensional representations.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/Online)
				Theory Slot				Practical Slot					L	T	P			
				End Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation									
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional		Lab work & Sessional	Skill based mini project								
3.	210114	Graphics – I	DC- 2	50	10	20	20	50	50	-	200	7	2	3	2	6	AO	Blended ** (4/2)

#### UNIT-1 INTRODUCTION TO DRAWING

- Introduction to drawing instruments and their use
- Lettering and Dimensioning: Introduction to architectural lettering, styles, proportion and scale, Methods of dimensioning
- Lines: different types of lines, their thickness and applications in architectural drawing.
- Scale: Architectural Metric scale, necessity of scaled drawing, selection of scale while preparing architectural drawing.

#### UNIT-2 GEOMETRICAL DRAWING & ORTHOGRAPHIC PROJECTION

- Introduction to plane geometry: Construction and development of planar surface–square, rectangle, polygon etc.
- Construction of conic sections: Ellipse, parabola and hyperbola
- Introduction to orthographic projection: Representation of geometric solids in terms of plan, elevation and side elevation in first angle projection – exercise on simple solids.
- Conversion of solids to orthographic projection and vice versa.

#### UNIT-3 ISOMETRIC VIEW & AXONOMETRIC VIEW

- Isometric view: Isometric view of solids, Isometric application in building–buildings with different shape and different types of roofs to include pitched roof, hipped roof, flat roof, vault, cone, dome etc

#### UNIT-4 BUILDING ELEMENTS AND BUILDING COMPONENTS

- Building Elements: Techniques of representing building elements such as doors, windows, steps, chajja, porch, canopy, balcony, parapet, foundation, walls, roofs, column, staircase, difference of levels, furniture fittings such as hand wash basins, WC pans, traps etc. on drawings in plan, elevation and section.
- Material Indications: Symbolic representation of building materials as specified by Indian Standard Code of practice.
- Building components: Components of a simple residential building.

#### UNIT-5 ISOMETRIC VIEW & AXONOMETRIC VIEW OF BUILDINGS

- Isometric view: Exterior view of a simple residential building showing all building components.
- Axonometric view: Axonometric view of a room interior showing all interior components.

### **COs & LOs for Graphics I**

Overall Course Outcome: Students will be able to develop, draw simple and complex objects in various types of views and will be able to visualize and draw buildings in different views.

CO1	Students will be able to <b>draw</b> the elements of design and apply them in their drawings.	LO1	<b>Learn</b> various drawing instruments and their use.
		LO2	<b>Understand</b> the lettering and dimensioning technique.
		LO3	<b>Apply</b> the techniques by using lines type, letters, dimensioning and scale in drawing.
		LO4	<b>Analyze</b> the necessity of scaled proportionate and properly illustrated drawing.
		LO5	<b>Draw</b> compositions using all elements.
CO2	Students will be able to <b>draw</b> planar surface / conic sections in orthographic projections.	LO1	<b>Study</b> the construction and development of planar surfaces, conic and orthographic projection.
		LO2	<b>Understand</b> use of planar surfaces, conic and orthographic projection.
		LO3	<b>Construct</b> various geometrical shapes.
		LO4	<b>Interpret</b> and visualization of geometrical shapes in different views & angles.
		LO5	<b>Draw</b> compositions showcasing various objects in conic sections, orthographic projections.
CO3	Students will be able to <b>draw</b> solids and building elements in isometric projection.	LO1	<b>Study</b> the construction and development of solids and building roof elements.
		LO2	<b>Understand</b> the isometric projections.
		LO3	<b>Develop</b> solids and building roof elements in isometric projection.
		LO4	<b>Visualization</b> of geometric solids and building roof elements.
		LO5	<b>Draw</b> compositions of geometric solids and building roof elements in isometric projections.
CO4	Students will be able to <b>draw</b> plans, elevations and sections.	LO1	<b>Learn</b> various building elements, components and materials.
		LO2	<b>Understand</b> use of building elements, components and materials
		LO3	<b>Illustrate</b> the representation techniques of building elements, components and materials.
		LO4	<b>Analyze</b> all representations and symbols in buildings.
		LO5	<b>Draw</b> plans, elevations and sections using all building elements, components and materials.
CO5	Students will be able to <b>draw</b> interior and exterior views.	LO1	<b>Learn</b> about axonometric and isometric views of complex objects.
		LO2	<b>Understand</b> use of axonometric and isometric views for exteriors and interiors of buildings.
		LO3	<b>Illustrate</b> interiors, exterior elements.
		LO4	<b>Draw an isometric</b> view of the exterior of the building using all building components.
		LO5	<b>Draw an axonometric</b> view of interiors of rooms using building components.

#### **REFERENCES:**

1. K. Venugopale et al., "Engineering Drawing + AutoCAD", New Age International Publishers, 2010.
2. Francis D.K Ching, "Architectural Graphics- Fifth Edition", John Wiley and Sons, New Jersey, 2009.
3. N.D. Bhatt et al., "Engineering Drawing" (53rd Edition), Charotar Publishing House, Anand, India, 2014.
4. Morris et al., "Geometrical Drawing for Art Students", Universities press, 2012.
5. Leslie Martin C., "Architectural Graphics", The Macmillan Company, New York, 1978.

**Note:** Four questions shall be asked. First question will contain 20 marks & will be compulsory. Other three questions will be of equal marks and one question may have options.

#### 4. Structure – I (Code –210115)

##### Objectives –

The course aims to obtain understanding the basic knowledge & overview of structural systems used in buildings, historical development of structural form and the evolution of structural design knowledge, from Gothic cathedrals to long span structural systems, principles of structural mechanics & how bending moment and shear force diagrams are used to analyze simple structural behavior.

S. No.	Subject Cod	Subject Name	Category	Maximum Marks Allotted						Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/Online)		
				Theory Slot			Practical Slot					End Sem. Exam	Continuous Evaluation	L				T	P
				End Term Evaluation		Continuous Evaluation		Lab work & Sessional	Skill based mini project										
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional												
4.	210115	Structure I	BSAE-2	50	10	20	20	-	-	-	100	3	2	1	-	3	PP	Offline***	

#### UNIT-1 FORCE & EQUILIBRIUM

Statics of a particle, composition and resolution of forces, moment of a force, parallel forces, couples, general conditions of equilibrium.

#### UNIT-2 GRAVITY AND MOMENT OF INERTIA

Center of gravity and moment of inertia of composition and cut out sections, parallel and Perpendicular axes theorem, stability of equilibrium.

#### UNIT-3 STRESS & STRAIN

Simple stresses and strains, direct stresses, compound stresses.

#### UNIT-4 LOADS

Shear force and bending moments for strained beams subjected to concentrated load and Distributed loadings (Simply supported and cantilever only) support reactions.

#### UNIT-5 STRESS IN BEAMS

Stress in beams: Direct, bending and shearing stress in beams.

**Note:** Assignment work should include design and analysis of simple elements as stated above with drawings.

### COs & LOs for Structure - I

Overall Course Outcome: Students will be able to analyze simple structural behaviour using principles of structural mechanics, bending moment and shear force diagrams.

CO1	Students will be able to <b>understand</b> the behaviour of forces and various principles of strength of materials.	LO1	<b>Learn</b> statics of a particle, composition and resolution of forces, moment of a force, parallel forces, couples, general conditions of equilibrium.
		LO2	<b>Understand</b> the composition, resolution and types of forces, general conditions of equilibrium.
CO2	Students will be able to <b>understand</b> relationship between the bending to the material property and geometry	LO1	<b>Learn</b> centre of gravity and moment of inertia of composition and cut out sections.
		LO2	<b>Understand</b> parallel and Perpendicular axes theorem, stability of equilibrium
CO3	Students will be able to <b>calculate</b> stresses and strains.	LO1	<b>Learn</b> simple stress and strain.
		LO2	<b>Understand</b> direct and compound stress.
		LO3	<b>Calculate</b> direct and compound stress and strain
CO4	Students will be able to <b>apply</b> shear force and bending moments for strained beams subjected to concentrated load and Distributed loadings.	LO1	<b>Learn</b> shear force and bending moment.
		LO2	<b>Understand</b> Shear force and bending moments subjected to concentrated load.
		LO3	<b>Apply</b> shear force and bending moments for strained beams subjected to concentrated load and Distributed loadings (Simply supported and cantilever only) support reactions.
CO5	Students will be able to <b>calculate</b> the level of stress in beams.	LO1	<b>Learn</b> various stresses in beam.
		LO2	<b>Understand</b> direct, bending and shearing stress in beams.
		LO3	<b>Calculate</b> the various levels of stress in beams.

#### TEXT BOOKS:

1. S.B. JUNNARKAR, "AppliedMechanics"2015
2. RAMAMURTHAM, "AppliedMechanics"2010
3. S.B. JUNNARKAR/H.J. SHAH, "Mechanics of Structure Vol.1" : 32nd Edition :2016
4. DR. B.C. PUNAMIA, "Strength of Materials"2018

#### REFERENCE BOOKS:

IS Codes

1. IS 465:2000
2. SP-16 3
3. SP-34



## 5. History of Architecture- I (Code –210116)

### Objectives –

The course aims to obtain knowledge of evolution with regarding to Indian architecture, in India as this is an integrated expression of art, culture, vernacular material and techniques of the place, designs that are rooted in this country and suitable to the lifestyle of its people, varied culture and the resulting architectural productions which are unique in time and place.

S. No.	Subject Cod	Subject Name	Category	Maximum Marks Allotted							Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/Online)
				Theory Slot				Practical Slot					L	T	P			
				End Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation									
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional		Lab work & Sessional	Skill based mini project								
5.	210116	History of Architecture- I	DC- 3	50	10	20	20	-	-	-	100	3	2	1	-	3	PP	Blended* (2/1)

### UNIT-1 RIVER VALLEY CIVILIZATIONS OF INDIA

Prehistoric civilization, Neolithic & Paleolithic. Indus Valley Civilization: culture and pattern of settlement. Vedic culture - Vedic village and rudimentary forms of bamboo and wooden construction - Aryan civilization - origin of early Hinduism.

### UNIT-2 BUDDHIST ARCHITECTURE

Origins of Buddhism and Jainism, Evolution of Buddhist Architecture and its salient features- Examples – Ashokan Pillar at Sarnath and Sanchi stupa. Chaitya hall and Vihara - Buddhist rock cut architecture Examples - Chaitya hall at Karli, Viharas at Nasik.

### UNIT-3 EGYPTIAN ARCHITECTURE

Study of the influences & architectural character of ancient Egypt with relevant examples of Tomb & Temple structures (Cult and Mortuary temples), Mastaba – development and typical components of Pyramids – Complex of Zoser, Pyramid of Cheops and Cephren.

### UNIT-4 WEST ASIATIC ARCHITECTURE

Study of Mesopotamian architecture, Urbanization in the Fertile Crescent – Sumerian, Babylonian, Assyrian and Persian (with examples of Ziggurat, Sargon palace & Palace of Persepolis). Mayan Civilization- Ceremonial platforms, palaces, pyramids and temples.

### UNIT-5 INTRODUCTION TO SOUTH EAST ASIAN AND EAST ASIAN ARCHITECTURE

Study of prominent architectural character of south Asian countries. Study of relevant examples like Angkorwat Cambodia. Introduction to Chinese architecture and typical examples of Pagoda, Pylons, Great Wall of China, temples, etc. Introduction to Japanese architecture, its characteristic features and typical examples: Pagoda, temples, monasteries, tea houses etc.

**COs & LOs for HOA – I**

Overall Course Outcome: Students will be able to **develop** an appreciation of varied cultures and the resulting architectural productions that are unique in time and place & suitable to the lifestyle of its people.

CO1	Students will be able to <b>apply</b> concepts and architectural expressions in their own design.	LO1	<b>Remember</b> basic concepts regarding the historical and architectural development in ancient civilization.
		LO2	<b>Observe</b> diverse artistic and architectural expressions with regard to the ancient civilizations.
		LO3	<b>Illustrate</b> visual and verbal vocabularies of architecture of ancient civilizations.
		LO4	<b>Evaluate</b> architectural forms and space with reference to architecture of ancient civilizations.
		LO5	<b>Reproduce</b> with help of sketches/visuals (softwares)/3D (models) of various architectural forms and styles of ancient civilizations.
CO2	Students will be able to <b>apply</b> elements of Buddhist architecture in their own design.	LO1	<b>Understand</b> basic concepts regarding the historical and architectural development in buildings in Buddhist Architecture.
		LO2	<b>Identify</b> diverse artistic and architectural expressions with regard to the Buddhist Architecture.
		LO3	<b>Illustrate</b> visual and verbal vocabularies of Buddhist Architecture.
		LO4	<b>Analyse</b> architectural forms and space with reference to Buddhist Architecture.
		LO5	<b>Replicate</b> with help of sketches/visuals (softwares)/3D (models) of various architectural forms and styles of Buddhist Architecture.
CO3	Studying this, students will be able to <b>apply</b> elements of Egyptian architecture in their own design.	LO1	<b>Understand</b> the architectural characters of the Ancient Egyptian buildings.
		LO2	<b>Identify</b> development and typical components of Egyptian pyramids.
		LO3	<b>Illustrate</b> visual and verbal vocabularies of Egyptian Architecture.
		LO4	<b>Analyse</b> architectural forms and space with reference to Tomb, Mastaba, Temples, etc. in Egyptian architecture.
		LO5	<b>Replicate</b> with help of sketches/visuals (softwares)/3D (models) of various architectural forms and styles of Egyptian Architecture.
CO4	Studying this, students will be able to <b>apply</b> elements and concepts of West Asiatic Architecture in their own design.	LO1	<b>Remember</b> basic concepts regarding the historical and architectural development in ancient civilization of Mesopotamian, Sumerian, Babylonian, Assyrian & Persian.
		LO2	<b>Identify</b> diverse artistic and architectural expressions with regard to these civilizations
		LO3	<b>Illustrate</b> visual and verbal vocabularies of each of Ziggurats, Palaces, Temples, Ceremonial platforms, Pyramids, etc.
		LO4	<b>Analyse</b> architectural forms and space with reference to West Asiatic Architecture.
		LO5	<b>Replicate</b> with help of sketches, visuals (softwares) and 3D (models) of various architectural forms and styles of West Asiatic Architecture.
CO5	Studying this, students will be able to <b>apply</b> elements of South East & East Asian architecture in their own design.	LO1	<b>Understand</b> basic concepts regarding the historical and architectural development in buildings in South East & East Asian Architecture.
		LO2	<b>Identify</b> prominent architectural character of the South East & East Asian Architecture with help of typical examples of Pagoda, Pylons, Temples, Monasteries, etc.
		LO3	<b>Illustrate</b> visual and verbal vocabularies of South East & East Asian Architecture.
		LO4	<b>Analyse</b> architectural forms and space with reference to South East & East Asian Architecture.
		LO5	<b>Replicate</b> with help of sketches, visuals (softwares) and 3D (models) of various architectural forms and styles of South East & East Asian Architecture.

**TEXT BOOKS:**

1. SATISH GROVER, “The Architecture of Indian (Buddhist & Hindu)”
2. A VOLWANSEN, “Living Architecture (Indian)”, Oxford & IBH London
3. Pier Luigi Nervi, General Editor, “History of World Architecture – Series”

**REFERENCE BOOKS:**

1. PERCY BROWN, “Indian Architecture (Buddhist & Hindu), Taraporewala & Sons, Bombay. 2nd Edition
2. CHRISTOPHER TADGILL, “History of Architecture in India”, Phaidon Press.
3. History Of Architecture by Sir Bannister Fletcher 20th edition
4. The Story Of Architecture by Patrick Nuttgens 2nd Edition
5. Space, Time And Architecture by Siegfried Gideon 5<sup>th</sup> Edition

## 6. Workshop – I (Code –210117)

### Objectives –

The course aims to obtain the ability to appreciate the three dimensional implications of design and to introduce the students to the techniques of model making, basics of rendering, presentation skills & model making with various materials.

S. No.	Subject Cod	Subject Name	Category	Maximum Marks Allotted							Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/Online)
				Theory Slot				Practical Slot					L	T	P			
				End Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation									
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional		Lab work & Sessional	Skill based mini project								
6.	210117	Workshop – I	SEC -I	-		-	-	20	20	10	50	4	-	-	4	2	SO	Offline**

### UNIT-1 VISUAL ART

General characteristics of visual art/Fundamentals of visual art: Space, Form, size, Shape, Line, Color, Tone values, Perspective, Design and aesthetic organization of Visual elements in art object (Composition).The use of two and three dimensions in visual art. Tactile quality in art. Environment and art. Perceptual and conceptual aspects in art. Use of various kinds of papers in art making.

Exercise: Art Installation using above techniques.

### UNIT-2 CARPENTRY & FOUNDRY

Introduction to the carpentry tools, processes, joints and wood working machines. Preparation of various carpentry joints, fixing of plywood, Blackboards, commercial boards and their application in furniture. Models in appropriate materials for understanding of joinery in wooden construction. Introduction, type of patterns, pattern making, preparation of moulds and moulding equipment details.

Exercise: Construction of Joints and basic Furniture.

### UNIT-3 DEVELOPMENT OF SURFACES

Development of simple and composite forms using paper, Thermocol, wire, Wax, acrylic, sheets and similar materials. Introduction to metallic sections, joinery tools, joinery processes and working with them. Bonds in masonry based on the programme of building construction to make the various forms of masonry structures. Mixing of concrete, preparation of various objects.

Exercise: Surface development examples using different materials and creating joints in masonry structures using above techniques.

### UNIT-4 FABRICATION

Introduction to welding equipment, processes and its applications.

Exercise: Create an Art installation from metal pieces by welding them.

### UNIT-5 PAINTING & POLISHING

Classification of paints, varnishes ingredients of paints, painting methods-brush, spray, hot spray etc.

Exercise: Murals and wall paintings using above techniques.

### **COs & LOs for Workshop I**

Overall Course Outcome: Students will be able to develop, draw simple and complex models in various materials using different techniques.

CO1	Students will be able to <b>create</b> visual art installations.	LO1	<b>Learn</b> various visual art typologies and kinds of paper in art making.
		LO2	<b>Understand</b> the fundamentals of visual art.
		LO3	<b>Analyse</b> the perceptual and conceptual aspects of visual art
		LO4	<b>Compose</b> an art installation using the above knowledge.
CO2	Students will be able to <b>Construct</b> various joints and models in different materials.	LO1	<b>Learn</b> the tools, joints and machineries used in carpentry.
		LO2	<b>Understand</b> different materials and their appropriate use.
		LO3	<b>Construct</b> various joints and models in wood, ply board, etc.
CO3	Students will be able to <b>build</b> moulds and joints for model making.	LO1	<b>Learn</b> various patterns in foundry.
		LO2	<b>Understand</b> the pattern making, moulding and making moulds.
		LO3	<b>Build</b> a mould and foundry joints using different materials.
CO4	Students will be able to <b>construct</b> models out of metal.	LO1	<b>Learn</b> about welding and its process.
		LO2	<b>Understand</b> the welding equipment and their application.
		LO3	<b>Weld</b> a model or an abstract using the different processes and equipment.
CO5	Students will be able to <b>draw</b> murals and paint.	LO1	<b>Learn</b> about various types of paints and ingredients in paints.
		LO2	<b>Understand</b> use of varnishes, etc. and methods of painting.
		LO3	<b>Draw</b> murals with the use of various paints, varnishes, and methods of painting.
		LO4	<b>Integrate</b> the above learned materials and techniques in creating their design models in further studies

#### **REFERENCES:**

1. BENN, the book of the house ,Ernest Benn limited London
2. Jannsen, Constructional Drawings & Architectural models, Kari Kramer Verlag Stuttgart,1973.
3. Harry W.Smith, The art of making furniture in miniature, E.P.Duttor Inc., New York,1982.
4. Thames and Hudson Manual of Rendering with Pen and Ink-Robert WGill.

## 7. Professional Communication (Code – 210117)

### Objectives –

The course aims to obtain communication skills in English by developing their listening, speaking, reading and writing skills, speaking skills with specific reference to prospective/actual clients, suppliers, business partners and colleagues, reading ability of journals, research articles etc & develop their writing skills especially writing project proposals and reports.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CT HRS	Contact Periods per week			Total Credits	Mode of Exam	Mode of Teaching (Offline/Online)
				Theory Slot				Practical Slot					L	T	P			
				End Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation									
				End Sem.	Proficiency in subject/course	Mid Sem.	Quiz/Assignment/Sessional		Lab work & Sessional	Skill based mini project								
7.	210118	Professional Communication	SEC -2	50	10	20	20	-	-	-	100	2	1	1	-	2	PP	Blended * (1/1)

### Unit -1 Introduction to Language & Linguistics

An Introduction to Linguistics, IPA, English Phonetic Symbols/Sign & Sounds, Place & Manner of Articulation.

### Unit -2 Communication

Communication: Approaches, Elements, Types, Process, Models; Management Communication (Levels of Communication) and Grapevine Communication, Verbal and Nonverbal Communication; Barriers to Communication; Johari Communication Window.

### Unit-3 Application of Linguistic Ability

1. Listening: Factors Affecting Listening and Improving Listening.
2. Speaking: Making Speeches, Presentation, Group Discussion, Meeting, Interview, Debate.

### Unit-4 Grammar & Vocabulary:

Grammar: Parts of Speech, Subject-verb Agreement, Active and Passive Voice, conditional sentences. Vocabulary: Using the dictionary and thesaurus, word formation, prefix & suffix, idioms, phrasal verbs.

### Unit-5 Report Writing:

Reading Comprehension: Stories, Passages, Poetry and Scientific Text

Writing: Essentials of good writing, Technical Descriptions of Simple Engineering Objects; Formal (Application, Email, CV, Résumé, Memo, Report writing)

\*Material for story and prose is to be selected by concerned teacher in class.

**COs & LOs for Professional Communication**

Overall Course Outcome: Students will be able to develop the ability to write and communicate professionally in the language

CO1	Students will be able to <b>speak</b> effectively.	LO1	<b>Learn</b> linguistics, IPA and English phonetics, etc.
		LO2	<b>Understand</b> the place and manner of articulation.
		LO3	<b>Analyse</b> the perceptual and conceptual aspects of speaking.
		LO4	<b>Speak</b> clearly, effectively and appropriately in a public forum to a variety of audiences and purposes
		LO5	<b>Prepare and deliver</b> oral presentations and arguments acceptable within the Engineering Profession Effectively
CO2	Students will be able to <b>communicate their</b> design and ideas.	LO1	<b>Learn</b> the communication approaches, elements, types and process.
		LO2	<b>Study Various</b> types of communication.
		LO3	<b>Practice Various</b> communication types and skills in life.
		LO4	<b>Demonstrate</b> knowledge and comprehension of major text and traditions in language as well as its social, cultural and historic context
CO3	Students will be able to learn the techniques to speak publically.	LO1	<b>Learn</b> various factors affecting listening.
		LO2	<b>Comprehend</b> to improve listening.
		LO3	<b>Learn</b> to make speeches and presentations.
		LO4	<b>Apply</b> the qualities and techniques learnt to make speeches, debate, interviews, etc.
		LO5	<b>Read</b> a variety of text critically and analytically so as to demonstrate in writing and / or speech the interpretations of those texts
CO4	Students will be able to <b>construct</b> models out of metal.	LO1	<b>Learn Various</b> grammatical aspects of writing and speaking the language.
		LO2	<b>Expand</b> the vocabulary.
		LO3	<b>Practice To</b> use the techniques in explaining Design.
		LO4	<b>Interpret</b> text written in English assessing the result in written and oral arguments using appropriate material for support
CO5	Students will be able to <b>write</b> reports explaining their design and later on papers.	LO1	<b>Learn</b> about report writing and its process.
		LO2	<b>Understand</b> the techniques and essentials of report writing.
		LO3	<b>Draft</b> Formal Application, mail, CV, Résumé, Memo, Report for design, etc.
		LO4	<b>Implement</b> professional work habits, including those necessary for effective collaboration and cooperation with others

**Books: -**

1. Technical Communication — By Meenakshi Raman, OUP.2015
2. Understanding Human Communication — By Ronald Alderman by OUP 2016
3. Communication Skills for Engineers – Pearson Education.
4. Effective Business communication – Tata McGraw Hill 2008
5. Business Communication – OUP, Tata McGraw.2005
6. Practical English Grammar by Thomson Martinet – Oxford University Press 1986
7. A Handbook of Language laboratory by Cambridge University Press.2009