

First Year Second Semester

1. Architecture Design – II (Code – 210221)

Objective –

The course aims to obtain or learn the basic principles of space making, the forms of building through intensive design studio practice.

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.	210221	Architectural Design – II	DC- 4	100	20	20	20	50	30	10	250	7	2	3	2*(1.5)	8	AO	Offline**

PROCESS:

- Fragment the pre design process and help students build formats/templates for analysis. Guide to derive architectural design data through various studies
- Guide to program and to understand the causes for architectural spaces Guide to understand context & its influences
- Guide to learn and experiment the design process
- Guide to conceptualize the design/evolution of architecture Guide to document the design project

Note: Minimum four design problems shall be introduced in the semester out of which, one major problem, one small problem and two shall be time bound problems. Learning the basic principles of space making and form building through intensive design studio practice.

PROJECT 1(Prototype): SINGLE SPACE DESIGN

Enlighten the student on the design project overview & the design process to be followed through relevant presentations.

Present an analytical discourse on an identical architectural design project covering

- Architectural elements & relevant architectural terms
- Space planning (response to user & purpose with logic & application of standards)
- Material, form & structure
- Aesthetics & visual perceptions

PROJECT 2(Prototype): SMALL SCALE MULTI-SPACE DESIGN

Enlighten the student on the design project overview & the design process to be followed through relevant presentations.

Present an analytical discourse on an identical architectural design project covering

- Architectural, elements, spaces & terms
- Noted projects & architects
- Space planning (response to user & purpose with logic & application of standards)
- Site planning (contextual response, response to the natural environment, response to views + general site planning guidelines)
- Material, form & structure
- Aesthetics & visual perceptions.

PROJECT 3 & 4(Prototype): Time bound Problems of 6 hours to 48 hours.

COs & LOs for Architecture Design – II			
Overall Course Outcome: The course aims to obtain or learn the basic principles of space making, the forms of building through intensive design studio practice.			
CO1	Students will be able to discover Architectural elements & relevant architectural terms in response to Space planning and Understanding the Material, form & structure as well as Aesthetics & visual perceptions.	LO1	Interpret architectural design fundamentals (Relationship between people to build forms & built forms to environment)
		LO2	Summarize different functional spaces and their space requirements
		LO3	Identify human standards of design based on ergonomics
		LO4	Analyze pre-design process, design process & conceptualization stages in design
		LO5	Design objects based on the concept of space and form by modifying and evaluating an existing space. Express their designs through communication skills – verbal, script & graphics.
CO2	Students will be able to design project overview & the design process to be followed through relevant presentations with appropriate use of Architectural, elements, spaces & terms by understanding noted projects & architects as well as Space planning.	LO1	Interpret architectural design fundamentals (Relationship between people to build forms & built forms to environment)
		LO2	Summarize different functional spaces and their space requirements
		LO3	Identify human standards of design based on ergonomics
		LO4	Analyze pre-design process, design process & conceptualization stages in design
		LO5	Design objects based on the concept of space and form by modifying and evaluating an existing space.
CO3	As a result of completing Time bound Problems of 6 hours to 48 hours students will be able to maximize the potential of designing within the time frame.	LO1	Understand the application of the architectural design process for small scale projects of human habitat
		LO2	Transform the human behavioural needs into architectural program requirements
		LO3	Analyse the information on context and the human-space relationship
		LO4	Compose the architectural spaces in a design project in a given time frame.
		LO5	Communicate architectural drawings with the help of various mediums in given time frame

REFERENCES:

1. Mike W.Lin, Drawing & Designing with confidence – A step by step guide, John Wiley & sons, USA, 1998
2. Criss B.Mills, Designing with models : A Studio guide to making & using architectural models, Thomson & Wadsworth, USA, 2000. 1st Edition
3. DeChiara and Callender, Time saver standards for building types, McGraw hill company 1990
4. Bousmaha Baiche & Nicholas Walliman, Neufert Architect's data, Blackwell science ltd. 3rd Revised editio
5. Ramsey / Sleeper, National Architectural graphic standards, The American Institute of Architects 12th Edition (AGS 12e) , 2016
6. Space Planning Basics - Mark Karlen 2016

Note: Two small design problems shall be given in the End Semester Examination. 6 hours examination.

2. Building Construction – I (Code – 210212)

Objective –

The course aims to obtain knowledge of basic building components and doors, windows, different types of materials and their use in construction, the different materials & technology available & their application, the various types of roofing and its materials.

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.	210212	Building Construction -I	BSAE-3	50	10	20	20	20	20	10	150	5	2	1	2*(1.5)	6	PP	Blended** (3/3)	

UNIT-1 LOW-COST CONSTRUCTION

- Introduction to Low-cost construction techniques and materials with combinations of mud and terra – cotta.
- Foundation and walls in stabilized mud-rammed earth and compact earth blocks

UNIT-2 FOUNDATION AND EXCAVATION

- Introduction to foundation and its types, function and design factor.
- Detail of stepped brick and stone foundation.
- Excavation: Timbering to trenches. Tools, plants and equipment for excavation.

UNIT-3 MASONRY AND OPENINGS

- Types of bricks and stone and their uses. Definition and types of masonry.
- Various types of bond: English, Flemish & rat trap bonds for various thickness of wall .
- Detail of right angle, T- Junctions, stop end wall.
- Details of garden wall bond & ornamental bond.
- Stone: Types of stone masonry (random rubble and ashlar).
- Piers and Quoins.
- Plastering & Pointing, corbels, Damp proof courses and copings.

- Arches in brick and stone: flat, segmental, semi-circular and pointed.

- Lintels and sills: In brick and stone.

UNIT-4 INTRODUCTION OF BASIC BUILDING COMPONENTS

- Cross-section of a G+1 building to understand foundation, plinth beam, flooring, sill, lintel, slabs, parapet & weathering course

UNIT-5 ROOFS

- Simple configurations and details of various forms of roofs: Flat, sloped, pyramids and dome.
- Jack arch roofing, stone roofing system.

COs & LOs for Building Construction – I

Overall Course Outcome: The course aims to obtain knowledge of basic building components and doors, windows, different types of materials and their use in construction, the different materials & technology available & their application, the various types of roofing and its materials.

CO1	Students will be able to deal with effective budgeting which will reduce the cost of construction through use of locally available	LO1	Learn Low cost Construction Techniques.
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	materials along with improved skills and technology without sacrificing the strength, performance and life of the structure.	LO2	Understand the material and construction techniques through site visit and market surveys
		LO3	Develop a fundamental understanding of the relationship of materiality to construction systems and techniques
		LO4	Analyze The detail of materials with different combinations in buildings.
		LO5	Produce construction detail of foundation and walls in mud-rammed earth and compact earth blocks.
CO2	Students will be able to understand the types and properties of foundation by studying its types and excavation.	LO1	Learn various types of foundation in Brick and stone.
		LO2	Understand the use of different types of foundation depending upon usage.
		LO3	Develop a fundamental understanding of types of excavation in timber.
		LO4	Analyze the details of foundation with respect to soil type.
		LO5	Produce details of foundations in Stone, Brick and excavation through trenches.
CO3	Students will be able to understand the importance of walls in building, how they give security, divide available space of building to fulfill basic requirements and also safeguard humans from heat and cold.	LO1	Learn types of bricks and stones and their uses in building.
		LO2	Understand the difference between various types of bonds.
		LO3	Analyze types of stone masonry.
		LO4	Understand the details of piers ,quoins,pointing and plastering.
		LO5	Produce construction details of walls and piers.
CO4	Students will be able to understand the different building components and analyze its detailed drawings.	LO1	Learn the Building cross section to understand various components in sub- structure and super- structure.
		LO2	Understand the need of various components in building.
		LO3	Classify the components based on their arrangements, method or manner of construction, working operations and material.
		LO4	Analyze the use and properties of various components.
		LO5	Produce the drawings of the cross section of the building to understand the components.
CO5	Students will be able to use a suitable roof for their projects.	LO1	Understand Various forms of roofs
		LO2	Identify Types of roofs which include flat, sloped, pyramids, and domes
		LO3	Analyze the difference between the types of roofs.
		LO4	Produce the drawings of types of roofs.

REFERENCES:

1. W.B. McKay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition). **Fifth edition** (2013)
2. S.C.Rangwala – Engineering materials (Fortieth edition, 2013) – Charotar Publishing pvt.ltd. **40th** Revised and Enlarged : **2013**
3. Harold B.Olin, John L. Schmidt – Construction principles, Materials and Methods – John Wiley & Sons, Inc. 1995
4. Dr. B.C Punmia – Building construction (10th edition) - Laxmi Publications.
5. Roy Chudley (Author), Roger Greeno (Author) -construction Technology, 4th Edition. 1995
6. S.K. Duggal- Building materials (4th edition) – New age international publishers. 4th revised edition 2012
7. Bureau of Indian standards - Handbook on Masonry Design and Construction (First Revision). 1991
8. Hans Bans –Building construction details practical drawing, 2001.

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks (which shall be optional).

3. Graphics – II (Code – 210213)

Objectives –

The course aims to obtain the skill of representation in advanced drawing techniques, perspective, sciography and Measured Drawing.

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.	210213	Graphics – II	DC- 5	50	10	20	20	20	20	10	150	4	1	1	2	3	AO	Offline**

UNIT-1 ELEMENTS AND PRINCIPLES OF PERSPECTIVE DRAWING

- Anatomy of perspective drawing (Picture Plane, Centre line of vision, Eye Level, Height Line, Vanishing Points, Cone of Vision, Station Point, Horizon line, Ground line etc)
- Types of perspective drawing (one point, two point, three point)
- Introduction to methods of perspective drawing (Direct method , Approximate method, perspective grid)

UNIT-2 TWO POINT PERSPECTIVE VIEW OF BUILDINGS

- Construction of Two point perspective grid.
- Exercise on two point exterior perspectives of simple objects and their combination
- Exercise on Two point Perspective of building Interior by Direct projection Method / Approximate Method.
- Exercise on Two point Perspective of building exterior by direct projection Method / Approximate Method.
- Exercise on Sectional perspective

UNIT-3 ONE POINT INTERIOR PERSPECTIVE

- Construction of One point perspective grid
- Exercise on two point exterior perspectives of simple objects and their combination
- Exercise on One point Interior view of any room viz Bed Room, Kitchen, Drawing room etc. by direct projection Method / Approximate Method.

UNIT-4 SCIOGRAPHY

- Principles of Shades and shadows (Techniques of drawing shades and shadows of lines, planes, solids and architectural Building Elements)
- Exercise on Shade and shadow of typical building on Elevation and Site Plan
- Exercise on Shades and Shadows in perspective.

UNIT-5 MEASURED DRAWING

- Introduction to techniques on measurements of buildings, drawing and presentation
- Measured drawing of single storied building(s) :To measure and draw the Ground Floor Plan along with plot boundaries, four side elevations, two sections, block plan, site plan of existing single storied building (maximum of 100.0 sq. m. Plinth area).
- Exercises to include application of shade and shadow in site plan, elevation and exterior perspective.

COs & LOs for Graphics-II

Overall Course Outcome: The students will be able to create drawings in perspectives for exteriors and interior along with shades and shadows. Students also learn to understand and develop measured drawing for a small residential space.

CO1	Students will be able to construct the perspective drawings of different types and using different methods.	LO1	Learn the principles of perspective drawing
		LO2	Understand the types and terminology of perspective drawing
		LO3	Analyse the steps for making a one point and two point perspective
		LO4	Construct the perspective drawing for simple geometric objects
		LO5	Exercise the steps for making perspective drawings for combinations of simple geometric objects
CO2	Students will be able to construct two point perspective drawings for simple objects, its combinations, interior and exteriors of simple buildings	LO1	Study the construction and development of two point perspective grid
		LO2	Understand the steps to develop two point perspectives from various levels, in interior and exterior building views.
		LO3	Compare the two methods of perspective drawing : direct method and approximate method
		LO4	Exercise the two point perspective of building interior and building exterior
		LO5	Exercise the two point perspective in sectional view.
CO3	Students will be able to Construct one point perspective drawings for simple objects, its combinations and various interior spaces	LO1	Study the construction and development of one point perspective grid
		LO2	Understand the steps to develop one point perspectives in interior spaces
		LO3	Visualise the one point perspective drawing of interior spaces at various levels
		LO4	Exercise the one point perspective of a kitchen/bathroom interior
		LO5	Exercise the one point perspective of a bedroom/ living room interior.
CO4	Students will be able to develop shades and shadows in 2D and 3D drawings	LO1	Learn the terminologies of sciography and principles of shade and shadow in architectural graphics
		LO2	Understand techniques of drawing shades and shadows of simples shapes
		LO3	Visualise shade and shadow for various building elements in 2D and 3D
		LO4	Exercise shade and shadow for typical building on elevation, and site plan
		LO5	Exercise shade and shadow for typical building in perspective drawing
CO5	Students will be able to create plans, elevation sections for the same	LO1	Learn the significance of measured drawing in architecture
		LO2	Understand the measured drawing techniques for plans, elevation, site plan etc
		LO3	Visualise and draw the sketch design of measured building
		LO4	Create architectural drawings(plan, sections, four elevations, site plan) for the measured ground floor of the given building
		LO5	Exercise shade and shadow for the building elevation, site plan, and perspective drawing of the measured building

REFERENCES:

Robert W.Gill, "Perspective From Basic To Creative", Thames and Hudson, London, 2006

1. Francis D.K Ching, "Architectural Graphics- Fifth Edition", John Wiley and Sons, New Jersey,2009.
2. John Montague, "Basic perspective Drawing A Visual Approach", John Wiley and Sons, New Jersey, 2009.
3. Milind Mulick, "Perspective", Jyotsna prakashan, 2006
4. Ernest Norling, "Perspective Made Easy", Dover publications, 1999
5. M.G. Shah & C.M. Kale, "Principles of Perspective Drawing", Asia publishing House, 1965

4. Structure – II (Code – 210214)**Objectives –**

The course aims to obtain basic knowledge & overview of structural systems used in buildings, the structural form and the evolution of structural design knowledge, from Gothic cathedrals to long span structural systems, simple structural behavior.

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								
4.	210214	Structure II	BSAE-4	50	10	20	20	-	-	-	100	3	2	1	-	3	PP	Offline***

UNIT-1 OVERVIEW OF VARIOUS TYPES OF STRUCTURAL SYSTEMS IN ARCHITECTURE

Simple RCC frame system used for small span buildings – vaults & domes of various spans – types of trusses & their application for industrial buildings – various configurations in rcc roof slab – RCC folded plate roofing systems – Various types of shell structures – Space frames in steel used for large spans – Tensile structural systems – Suitable examples for all these structural systems.

UNIT-2 BASIC STRUCTURAL CONCEPTS

Various types of loads in buildings – compression and tension in structures – Effect of temperature & settlement on buildings – properties of structural materials such as steel, concrete, RCC, wood, brick & stone – Evolution of the concept of span from architectural history: Temples in Egypt, Greece, South India, Indo- Aryan etc – Vaults & domes in historical buildings: Domes in Pantheon & Hagia Sophia, Vaults during Romanesque, Gothic & Mughal period .

UNIT-3 REINFORCED CEMENT CONCRETE STRUCTURES

Simply spanned RCC slabs & load bearing walls – one way & two way RCC slabs – coffer slab, grid beam slab in RCC – vault, dome, pitched roof, hipped roof in RCC -simple RCC frame structural system up to 5 floors – their application with suitable examples. Concept & various configurations of the folded slab roof – Concept of thin shells – simply curved & doubly curved shells, interpenetrating cylindrical shells, hyperbolic paraboloids, HyPars etc.

UNIT-4 STEEL STRUCTURAL SYSTEMS

Simple steel truss - members in tension & compression – various types of trusses – Warren, Pratt, Fink, Howe, Bowstring, mansard etc – girders & trusses in saw tooth roof configuration, Steel frame domes – Fuller, Geodesic, schwedler dome configurations - Concept of Space frames: various types, single, double & triple layered tubular steel space frames & their use as long span structural system – Concept of tensile roofing system – saddle roof, mast supported, Arch supported, Point supported & their combinations – tensegrity roof structures.

UNIT-5 STRUCTURAL MECHANICS

Composition and Resolution of Forces – concept of stress / strain, young's modulus, typical stress strain curve for ductile & rigid materials, Hooke; law – Theory of Bending Moment & Shear force – their application in buildings for various loads & support conditions (Simply supported, Cantilevered, continuous etc). Simple problems on the above mentioned.

COs & LOs for Structure - II			
Overall Course Outcome: Students will be able to identify various structural systems and will be able to analyze simple structural behaviour using bending moment and shear force diagrams in buildings.			
CO1	Students will be able to understand the various types of structural systems in architecture	LO1	Learn about simple RCC frame systems, trusses, etc.
		LO2	Understand use of RCC shell structure, space frames and tensile structure.
CO2	Students will be able to understand types of loads in buildings and properties of different materials used in structure.	LO1	Learn various types of loads in buildings
		LO2	Understand compression and tension in structures and properties of various structural materials.
CO3	Students will be able to examine different reinforced cement concrete structures	LO1	Study about simply spanned RCC slabs & load bearing walls.
		LO2	Understand one way & two-way RCC slabs, coffer slab, grid beam slab in RCC, vault, dome, pitched roof, hipped roof in RCC.
		LO3	Examine different RCC slabs used in building.
CO4	Students will be able to analyze various steel structural systems.	LO1	Learn about a simple steel truss system.
		LO2	Understand the concept and use of various types of truss, Steel frame domes and space frames.
		LO3	Identifying various steel structural systems.
		LO4	Analyzing simple steel truss system, one way & two-way RCC slabs, coffer slab, grid beam slab in RCC, vault, dome, pitched roof, hipped roof in RCC.
CO5	Students will be able to solve problems on structural mechanics.	LO1	Learn about composition and resolution of forces
		LO2	Understand the concept of stress/strain, young's modulus, typical stress strain curve for ductile & rigid materials, Hooke's Law and theory of Bending Moment & Shear force.
		LO3	Solve problems on stress/strain, young's modulus, typical stress strain curve for ductile & rigid materials, Hooke law and Bending Moment & Shear force.

REFERENCES:

1. Henry .J.Cowan, Forrest Wilson, *Structural Systems*, Van Nostrand Reinhold Company, New York. 1981
2. Bjorn N Sandekar et al, *The structural basics of Architecture – 2nd edition*, Routledge, Newyork, 2011.
3. Mario Salvadori, Robert Heller, *Structure in Architecture*, Prentice International Series in Architecture, New Jersey, 15th Printing edition (1963)
4. Wayne Place, *Architectural structures*, John wiley & sons, Canada, 2007.
5. Curt Siegel, *Structure and Form in Modern architecture*, Reinhold publishing corporation, Newyork., (1966)
6. Rowland J. Mainstone, *Developments in Structural form*, Architectural press, Oxford, 1975.1999

5. History of Architecture- II (Code – 210215)

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 those 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 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						
5.	210215	History of Architecture- II	DC- 6	50	10	20	20	-	-	-	100	3	2	1	-	3	PP	Blended* (2/1)

UNIT-1 EVOLUTION OF HINDU TEMPLE ARCHITECTURE:

Hindu forms of worship – Origin and evolution of temple form (Nagar, Dravida & Vesara) - meaning, symbolism, ritual and social importance of temple, categories of temple, and elements of temple architecture.

UNIT-2 NORTHERN INDIAN TEMPLES:

Early shrines of the Gupta Period. Their salient features. Salient features of Nagara Style Temple Architecture. **Examples of Orissa style - Lingaraja temple at Bhubaneswar & Sun temple at Konark - Example of Madhya style – Kandariya Mahadev temple at Khajuraho - Example of Gujarat style - Surya Temple at Modhera.- Example of Maru-gurjara style – Ambaji Mata Temple, Udaipur, Example of Jain style temple- Dilwara temple, Mt. Abu. Examples of North & North East (Kashmir, Uttarakhand, etc.).** **Examples of Orissa Temple Style, Madhya Temple Style, Gujarat Temple Style, North Temple Style, etc.**

UNIT-3 DRAVIDIAN STYLE TEMPLES:

Brief history of South India - relation between Bhakti period and temple architecture - Temple Complexes & Towns (Madurai, Srirangam), Dravidian Order (evolution of Dravidian orders under **pallavas, cholas and pandyas various dynasties**), Gopurams. Examples: Early shrines of the Chalukyan periods, Tigawa temple - Ladh Khan and Durga temple, Aihole - Papanatha, Virupaksha temples, Pattadakal- Rock cut productions under Pallavas, Shore temple and five rathas at Mahabalipuram, Kailasanatha temple, Ellora. Example of Chola style - Brihadeeswara temple at Tanjore - Example of Pandyan style - Meenakshiamman temple, Hoysala architecture: Belur and Halebid. **and Kailasanathar temple at Kanchipuram.**

UNIT – 4 INDO - ISLAMIC ARCHITECTURE

Introduction to Islamic culture worldwide, Classification of Islamic architecture in India, Mughal Architecture in India. Religious (Maqbara, Masjid, Idgah, etc.) and Secular typologies (Sarai, Rauza, etc.) of Islamic architecture. Features of an Indian mosque, concept of squinch arches, and its variations. Imperial style. Provincial styles. Characteristics of Mughal architecture, planning, dome construction, materials. Development of the Mughal style under different rulers

Examples under imperial style **& Provincial Style.** - Qutub Complex, Qutubminar and Alai Darwaza at Delhi - Tomb of Ghasiuddin Tughlaq, Lodi garden at Delhi. Characteristics of the provincial styles in different regions through examples - **Punjab style - Tomb of Shah Rukni Alam, Bengal style - Chotasona masjid at Gaur, Gujarat style - Jami masjid at Ahmedabad, Deccan style –Gol gumbaz at Bijapur and Charminar at Hyderabad.**

Examples of Mughal architecture under different rulers - **Humayun- Humayun's Tomb at Delhi, Akbar- Fatehpur Sikhri. Shahjahan - The Taj Mahal, Agra - Red Fort at Delhi, etc.**

UNIT – 5 FORTIFICATIONS AND PALATIAL ARCHITECTURE

Introduction to Fortifications, forts, Palaces across the country.

Examples of Forts – **Salient features of forts** like Gwalior Fort, **Daulatabad Fort, Golconda Fort, etc.**

Examples of palaces – **Salient features of palaces** like Mysore Palace, **Padmanabha Palace, Umaid Bhawan, etc.**

COs & LOs for HOA – II			
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 apply various temple architectural forms and architectural expressions in their own design.	LO1	Learn basic concepts of temple architecture of India.
		LO2	Understand diverse artistic and architectural expressions in Indian Temple Architecture and origin and evolution of it.
		LO3	Illustrate visual and verbal vocabularies of various categories of temple architecture of ancient India.
		LO4	Analyze temple architectural forms and space and its importance in Indian culture
		LO5	Reproduce with the help of sketches/visuals (softwares)/3D (models) of various architectural forms and styles of temple architecture of India.
CO2	Students will be able to apply the North Indian temple Architecture style and elements in their own design.	LO1	Learn basic concepts of North Indian temple architecture.
		LO2	Understand diverse artistic and architectural expressions in North Indian temple architecture through examples.
		LO3	Illustrate specific visual and verbal vocabularies of North Indian temple architecture.
		LO4	Analyze North Indian temple architectural forms and space and its meaning, symbolism, rituals & social importance in Indian culture.
		LO5	Reproduce with help of sketches/visuals (softwares)/3D (models) of various architectural forms and styles of North Indian temple architecture.
CO3	Students will be able to apply the South Indian temple Architecture style and elements in their own design.	LO1	Learn basic concepts of South Indian temple architecture.
		LO2	Understand diverse artistic and architectural expressions in South Indian temple architecture through examples.
		LO3	Illustrate specific visual and verbal vocabularies of South Indian temple architecture.
		LO4	Analyze South Indian temple architectural forms and space and its meaning, symbolism, rituals & social importance in Indian culture.
		LO5	Reproduce with help of sketches/visuals (softwares)/3D (models) of various architectural forms and styles of South Indian temple architecture.
CO4	Students will be able to apply elements and concepts of Islamic in their own design.	LO1	Remember basic concepts and division in Islamic culture & architecture
		LO2	Identify diverse artistic and architectural forms in religious spaces, Gateways, Minarets, Palaces, Tombs, etc.
		LO3	Illustrate visual and verbal vocabularies of each of religious spaces, Gateways, Minarets, Palaces, Tombs, etc. in Islamic Architecture.
		LO4	Analyze architectural forms and space with reference to various examples of buildings in Islamic Architecture.
		LO5	Replicate with help of sketches, visuals (softwares) and 3D (models) of various architectural forms and styles of Islamic Architecture.
CO5	Students will be able to apply elements of forts and palaces in their own design.	LO1	Understand the various typologies of forts and palaces in India
		LO2	Identify prominent architectural characters of forts & palaces in India.
		LO3	Illustrate visual and verbal vocabularies of forts & palaces in India.
		LO4	Analyze architectural forms and space with reference to forts & palaces in India.
		LO5	Replicate with help of sketches, visuals (softwares) and 3D (models) of various architectural forms and styles of forts & palaces in India.

REFERENCES:

1. Percy Brown, Indian Architecture (Islamic Period) - Taraporevala and Sons, Bombay, 1983 revised edition 1995
2. Satish Grover, The Architecture of India (Buddhist and Hindu period), Vikas Publishing House, New Delhi, 1981
3. Satish Grover, The Architecture of India (Islamic)Vikas Publishing House Pvt. Ltd., New Delhi, 1981. revised edition 2009
4. Christopher Tadgell, The History of Architecture in India, Longman Group, U.K. Ltd., London, 1990
5. A.Volwahren, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
6. George Mitchell, Monuments of India, Vol I, Buddhist, Jain, Hindu; Penguin books, 1990
7. Gateway to Indian Architecture, Guruswamy Vaidyanathan, Edifice Publication, 2003
8. Architecture of the Islamic World - George Michell - (its history and social meaning), Thames and Hudson, London, 1978.

6. Theory of Design (Code – 210216)

Objectives –

The course aims to obtain the theoretical aspects of design and understand how it could be manifested in architectural design, the ideologies from works of architects and planners, the design communication skills to enable to put forth the design ideas in graphics and literature.

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													
6.	210216	Theory of Design	DC- 7	50	10	20	20	-	-	-	100	2	2	-	-	2	pp	Blended* (2/1)		

UNIT-1 PRIMARY ELEMENTS IN ARCHITECTURE

Geometry in Architecture - points, lines and shapes. Linear elements, planar elements and volumetric elements. Patterns in nature and building design. Order to chaos. Regularity and irregularity.

UNIT-2 FORM AND SPACE

Elements of spatial definition – form defining space - elevated base plane, depressed base plane-vertical and horizontal elements defining space -depth and density of space - spatial juxtaposition and interpenetration – spatial characteristics of elementary shapes - qualities of architectural space - degree of enclosure. Analysis of works of famous architects in India & abroad.

UNIT-3 ORDERING PRINCIPLES AND MEANING IN ARCHITECTURE

Ordering Principles-Axis -Symmetry -Hierarchy - Datum -Rhythm -Repetition -Transformation - Measure and balance – spaces on human scale - proportion -- Golden Section, Le modular, Fibonacci series – Renaissance Theories - anthropomorphism and architecture - Figure and ground, positive and negative spaces.

UNIT-4 CONCEPTS IN ARCHITECTURAL DESIGN

Concept – types- Ideas and Intent in design - Intuitive, contextual, Iconic, Experiential, Symbolic, Modular. Ideologies and philosophies of architects'. Case Studies. Importance of graphics in architectural design. Study of site plans, city plans, conceptual drawings. Interpretation of architects' conceptual sketches and the respective buildings. Vernacular Architecture. Western & Indian Philosopher.

UNIT-5 RESPONSIVE AND RESPONSIBLE ARCHITECTURE

Phenomena of perception – looking, listening, feeling and moving through architecture –light and shade – Architecture as Making Frames -, Environmental-Energy based.

COs & LOs for Theory of Design			
Overall Course Outcome: Students will be able to develop an appreciation of design principles and elements and the resulting theories in architectural fields that are unique in time and place.			
CO1	Student will be able to Understand basic fundamental of design in natural and manmade environment	LO1	Relate various elements , spaces and design principles
		LO2	Categorize essential theoretical aspects in architectural studies
		LO3	Distinguish between regularity and irregularity
		LO4	Experiment patterns in design inspired from nature
CO2	Students will be able to Discuss best examples of built forms and situate them in the theoretical framework.	LO1	Define spatial elements of design to achieve good designs
		LO2	Learn spatial characteristics of shapes. spaces
		LO3	Analyze works of famous national and international architects
CO3	Student will be able to Understand the significance of aesthetics, history in architectural design.	LO1	Memorize aesthetic principles of design
		LO2	Journal about historical design concepts and theories
		LO3	Link human scale and proportion within the space
CO4	Students will be able to develop architectural thinking through past and present work to link design & theory.	LO1	Relate theories and ideologies of different architects in comparative mode
		LO2	Analyze Ideas from abstract thinking and implement them
		LO3	Judge Different types of architectural plans and drawings
		LO4	Interpret thoughts of architects through their sketches
CO5	Students will be able to Prioritize social responsibility for perfecting designs that improve the functions.	LO1	Relate human senses with architecture
		LO2	Experiment light and shadows in building form and design
		LO3	Adapt sustainable goals for designs
		LO4	Focus on ecological and humanitarian issues

REFERENCES:

1. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 2007.
2. Simon Unwin, Analysing Architecture, Rouledge, London, 2003.
3. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973.
4. Peter von Meiss -Elements of architecture - from form to place, Spon Press 1992.
5. Steen Eiler Rasmussen - Experiencing architecture, MIT Press, 1964.

7. Workshop – II (Code – 210217)**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 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.	210217	Workshop – II	SEC- 3	-	-	-	-	20	20	10	50	4	-	-	4	2	-	Offline**

UNIT-1 MODEL MAKING

Use of clay, Plaster of Paris, metal scrap, metal sheets, jute fibre etc. for study of forms through models. Making models of the various structural systems used in buildings like Space frames – using Match sticks, wires. Different forms of shell roofs using POP, Clay, Tensile structures using fabric, Origami Structures. Graphic's Models.

Exercise: Models of famous buildings out of above materials and techniques.

UNIT-2 MODEL MAKING WITH CNC

Use of a CNC machine in cutting boards. Different types of boards that are used. Working of CNC machine.

Exercise: Model Construction using CNC machine.

UNIT-3 INTRODUCTION TO ARCHITECTURAL MODEL MAKING AND BLOCK MODELLING

Introduction to concepts of model making and various materials used for model making Preparation of base for models using wood or boards. Introduction to block models of buildings (or 3D Compositions) involving the usage of various materials like Mount Boards, Clay etc. and the machines for cutting.

UNIT-4 DETAILED MODELLING

Making a detailed model which includes the representation of various building elements like Walls, Columns, Steps, Windows/glazing, Sunshades, using materials like Mount board, Snow-white board, and acrylic sheets. Representing various surface finishes like brick/stone representation, stucco finish etc. Various site elements– Contour representation, Roads/Pavements, Trees/Shrubs, Lawn, Water bodies, Street furniture, Fencing etc.

UNIT-5 PHOTOGRAPHY

Introduction to photography, use of camera, techniques in architectural photography.

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 create a replica model.	LO1	Learn various materials used in model making.
		LO2	Understand the fundamentals structures and stabilization of structures.
		LO4	Replicate a Model of a building using the materials and techniques learned.
CO2	Students will be able to Construct models using a CNC machine.	LO1	Learn the mechanics of CNC machines.
		LO2	Understand different materials and their appropriate use in CNC machines.
		LO3	Construct a model using a CNC machine.
CO3	Students will be able to build architectural blocks and building models.	LO1	Learn various types of architectural models and materials that can be used.
		LO2	Build an architectural model of a small-scale building.
CO4	Students will be able to construct detailed models.	LO1	Learn the details of various architectural elements.
		LO2	Understand the construction details of various architectural elements.
		LO3	Weld a model or an abstract using the different processes and equipment.
CO5	Students will be able to click professional architectural photographs	LO1	Learn about various photography skills and cameras.
		LO2	Understand use of cameras
		LO3	Identify techniques in architectural photography.
		LO4	Exercise the techniques learned in clicking architectural photographs.

REFERENCES:

1. BENN, the book of the house ,Ernest Benn limited London
2. Janssen, Constructional Drawings & Architectural models, Kari Kramer Verlag Stuttgart, 1973.