THIRD YEAR SIXTH SEMESTER

1. Architectural Design – VI (Code – 210625

Objectives –

The course aims to obtain knowledge of Architecture as a design response to Technology, hospitality industry in the first project & requires the student, large scale building with Innovation & experimentations.

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 Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation				L	T	P			
				End Sem.	Proficiency in subject/ course	Mid Sem.	Quiz/ Assignment /Sessional		Lab work & Sessional	Skill based mini project								
1.	**210625**	Architectural Design VI	DC- 13	100	10	20	20	40	20	20	250	7	2	3	2*(1.5)	**8**	AO	Offline**

PROJECT I: DESIGN FOR HOSPITALITY INDUSTRY

The project requires the understanding of the special nature and functioning of the hotel industry and to respond with suitable concepts of space planning, circulation, interior design, materials and lighting. Example: Hotels- Business, resort, heritage, boutique etc. The student needs to concentrate on site planning, space planning, circulation, services and the various aspects of interior design such as furniture, flooring, ceiling, lighting etc. Students get exposure to the difference between a business hotel & a resort as well as the special needs of heritage and Boutique hotels. Exercises in interior space visualization using computer software is attempted.

PROJECT II: URBAN INFRASTRUCTURE PROJECTS

Contemporary transportation terminals and stadiums are large buildings with multiple entries & exits dealing with large crowds and having multiple levels with large spans, complex services & demanding environmental conditions. Function, convenience and security will become the basic design parameters. Example - Bus terminal / Railway station / Indoor sports complex / Aquatic complex etc. This studio challenges the designer to come up with a feasible structural solution after undertaking a study of large span structural systems. Moreover planning for transport terminals requires understanding of safety norms & to design sport facilities understanding of optimum environmental parameters is the requisite.

COs & LOs for Architectural Design – VI (210601)

Overall Course Outcome: The course aims to obtain knowledge of Architecture as a design response to Technology, hospitality industry in the first project & requires the student, large scale building with Innovation & experimentations.

CO 1, 2, 3, 4, 5	The course should enable the student to: ● Train the student to gather knowledge on the given design project based on books / literature and websites. ● Make the student understand the complexity, functioning and salient features of the design project through organizing field visit, train them to document and present the findings. ● Develop design ideas and create them.	LO1	Summarize basic concept of spatial planning of different types of buildings such as Hospitality and Infrastructure projects
		LO2	Apply large span structural systems in design
		LO3	Apply building bye laws in building design.
		LO4	Apply various essential services in complex buildings.
		LO5	Analyze the project with respect to various environmental parameters.
		LO6	Design Hospitality and Infrastructure projects

REFERENCES:

1. Time saver standards for building types, De Chiara and Callender, McGraw hill company
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd
3. National Building Code - ISI
4. New Metric Handbook – Patricia Tutt and David Adler – The Architectural Press

Note: One design problem shall be given in End Semester Examination. 6X3 hours examination.

2. Building Services-III (Acoustic & Fire Fighting) (Code – 210602)

Objectives –

The course aims to obtain knowledge of the basic principles of acoustics in buildings and their integration with architectural design, suitable materials in the design of auditoria and the method to achieve noise control in built spaces, firefighting services and design alteration for it, Layout of firefighting integrated system in building design.

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								
2.	210622	Building Services III (Acoustic & Fire Fighting)	BSAE-14	50	10	20	20	-	-		100	3	2	1	-	**3**	PP	Blended*** (2/2)

UNIT-1 INTRODUCTION TO THE STUDY OF ACOUSTICS & SOUND TRANSMISSION, ABSORPTION, INSULATION

Acoustics-Definition, terms related to acoustics. Theory of sound: generation, propagation, transmission, reception of sound, sound waves, frequency, intensity wavelength, sound pressure, measurement of sound scales-decibel scale. Calculation of reverberation time using Sabine's formula, Recommended RT/Volume for different spaces. Acoustical defects-echoes, focusing of sound, dead spots, flutter echo. Room resonances, small enclosures, standing waves, proportioning of room dimensions. Room acoustic phenomena: Reflection (plane, concave and convex surfaces), diffusion, reverberation, absorption. Acoustical requirements of different types of building, sound absorption, absorption co-efficient and their measurements, Sound insulation, materials, STC ratings, sound isolation. Sound absorptive materials and their choices, absorption coefficients and their measurements, NRC value.

UNIT-2 NOISE CONTROL AND SOUND REINFORCEMENT & ACOUSTICS IN BUILDING DESIGN AND CONSTRUCTION

Sources and types of noise, characteristics and effect of noise impact on human beings/behavior, noise curves, transmission of noise – airborne and structure borne, transmission loss, Means of noise control- source (enclosures), path (Barriers and insulations) and receiver (personal controls).Measure of noise control for different constructions – construction details of cavity walls, composite walls, floating floor, wood-joist floors, plenum barriers.

Design: Site selection, shape, volume, treatment for interior surface, basic principles in designing open air theatres,

cinemas, broadcasting studios, concert halls, class rooms, lecture halls, theatres – Auditorium.
Construction: Constructional detailing, relation to walls/ partition, floor / ceiling/ opening/ windows/ doors. Acoustical requirement of different types of buildings.

UNIT-3 FIRE FIGHTING SERVICES

Fire extinction / suppression technology: constituents of fire, methods of fire extinguishment, Extinguishing agents / media Fire suppression equipment & installations (active fire protection measures) : fire detection and alarm systems (automatic fire alarm systems), Heat Detectors, Smoke detectors, flame detectors, Choice / Selection of Fire Detectors

Hydrant systems / installations- stand post and Underground type of hydrants (Sluice Valve Type). Internal Hydrant Systems - Dry-riser system, Wet-riser system, Wet-riser-cum -down-comer system and Down-comer-system. Sprinkler system types. Early Suppression Fast Response Sprinklers (ESFR), water spray systems, automatic drencher systems.

UNIT-4 FIRE FIGHTING SYSTEMS & BUILDING NORMS

Extinguishing Systems - Foam, CO2 and Halon Fire System, first aid firefighting equipment: portable fire extinguishers and its types, graphic symbols for fire protection plans, fire protection - safety signs. Building fire hazards: Relationship of Building Fire Hazards with Life Safety, Hazards from Building Contents, Fire Load and Fire Effects, Exposure Hazard, Hazards from Interior Finish and services. Hazards in Buildings from Collapse, Explosion. Life hazards in buildings and means of escape / egress / exit : Factors affecting Life Safety of Occupants, Growth and Spread of Fire and Smoke, Design Considerations of Means of Exit, Exit Requirements, Lifts and Escalators as Means of Exit, Occupant load, capacities of exits, internal staircases, fire lifts, Firefighting Shafts, external stairs, horizontal exit, illumination of exits ,fire compartmentation, fire tower, refuge areas and ramps.

UNIT-5 FIRE FIGHTING LAYOUT OF BUILDINGS & DESIGN AND DETAILING FOR ACOUSTICS OF MULTIPURPOSE HALLS

Analyze a Fire fighting layout for a commercial building, Reflected ceiling plan of smoke detectors / sprinklers, etc. for a multistoried building.

Discuss and analyses fire accident case studies.

Case studies of acoustically designed and treated multipurpose halls. Onsite measurement with Sound measurement equipment's. Design of a multipurpose hall for optimum acoustics - drawings and construction details of acoustical treatment on walls, ceilings and floors.

REFERENCES:

1. Architectural Acoustics- David Egan, J. Ross Publishing Classics
2. Acoustical Designing in Architecture- Vern.O Knudsen and Cyril M. Harris, Wiley Publisher
3. Acoustics, noise and buildings- Peter.H. Parkins and H.R. Humphreys, Pitman *publishing* corporation, New York, Chicago
4. Master Handbook of Acoustics–F. Alton Everest and Ken.C. Pohlmann Paper back *Publisher*

COs & LOs for BUILDING SERVICES-III			
Overall Course Outcome: The overall aim of the course is to introduce students to acoustical treatments in building and also to make them understand the significance of fire safety in buildings and its standard norms.			
CO1	To understand the principles of sound and acoustical requirements of various buildings	LO1	**Understand** the theory of sound transmission in enclosed spaces
		LO2	**Observe** the properties of sound in enclosed space and phenomena of room acoustics
		LO3	**Calculate** the reverberation time using Sabine's formula and acoustical requirements
		LO4	**Survey** on acoustical materials and techniques
CO2	To analyse the methods of sound reinforcement and noise control methods in enclosed space	LO1	**Define** the principles of sound reinforcement and Noise, sources and types.
		LO2	**Understand** the behaviour of noise and means of noise control
		LO3	**Analyse** measures of noise control
		LO4	**Evaluate** design requirements for noise control and sound reinforcement in various enclosed spaces (theatres, lecture hall. Studio etc.)
		LO5	**Develop** construction details for acoustical treatment in enclosed spaces.
CO3	To learn the application of firefighting equipments in buildings	LO1	**Understand** the significance of firefighting services in building,
		LO2	**Analyse** the working and installation of firefighting equipment in buildings
		LO3	**Analyse** the application fire hydrant systems in buildings
		LO4	**Evaluate** the installation of sprinkler systems through examples from existing building applications.
CO4	To determine the significance of norms and standards in firefighting systems and its application	LO1	**Learn** the standards and norms for firefighting services
		LO2	**Understand** the relationship between fire hazard and life safety in buildings
		LO3	**Analyse** the application of these norms through existing case examples
		LO4	**Evaluate** the space requirements, location and arrangement of firefighting equipment in building.
CO5	To apply the principles of acoustics and firefighting systems in various building by developing construction details and layouts for the same	LO1	**Evaluate** the construction details for acoustical treatment of any existing building
		LO2	**Evaluate** design of an auditorium/theatre/studio etc for acoustical treatment through existing building examples
		LO3	**Design** a multipurpose hall for optimum acoustics
		LO4	**Evaluate** the application of firefighting services in existing buildings
		LO5	**Design** a layout for firefighting services for commercial/institutional buildings

3. Site Planning &Landscaping (Code – 210623)

Objectives –

The course aims to obtain understanding of the environment, human interventions and its impacts on nature and knowledge about various measures of protecting it, various concepts, ideas and techniques prevalent in landscape architecture, concepts of site planning and effective measures of doing it, the historic development of landscaping and site planning to students.

UNIT-1 INTRODUCTION & ELEMENTS OF LANDSCAPE ARCHITECTURE AND LANDSCAPE DESIGN

Introduction to landscape architecture, ecology, ecological balance, landscape conservation, reclamation and landscaping of derelict lands, environmental impact assessment. Elements of landscape – land elements, land form plants and planting, water, lighting etc. characteristics and classification of plant materials, basic principles of landscape design; Factors to be considered, Use and application of plant materials in landscape design, and other components involved

UNIT-2 HISTORY OF LANDSCAPE ARCHITECTURE & URBAN LANDSCAPE

Development of landscape design: Detailed study of selected examples from Eastern, Central and Western

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				Theory Slot				Practical Slot										
				End Term Evaluation		Continuous Evaluation		End Sem. Exam	Continuous Evaluation				L	T	P			
				End Sem.	Proficienc y in subject/ course	Mid Sem.	Quiz/ Assign ment /Session al		Lab work & Sessional	Skill based mini project								
3.	210623	Site Planning and Landscaping Architecture	DC- 14	50	10	20	20	-	-		100	3	2	1	-	**3**	PP	Blended* (2/1)

traditions; Ancient Heritage - Mesopotamia, Egypt, Greece, Rome; Western Civilization – Europe: Italy, France, and England; The middle-east - The Persian tradition and its far reaching influence Eastern Civilization: China and Japan Ancient and medieval period in India; Mughal and Rajput Landscapes and study of contemporary landscape architecture.

Basic principles and elements of Urban landscape, Significance of landscape in urban areas, introduction to street furniture, road landscaping, waterfront development, landscaping of residential areas, Industrial Landscaping.

UNIT-3 INTRODUCTION TO SITE ANALYSIS & SITE INFLUENCING FACTORS

Introduction to Site analysis, Importance of site analysis; interrelationship between nature and human interventions , thematic traditions in site design, history of site design as a source for precedent analysis

On site and off site factors; Analysis of natural, cultural and aesthetic factors; topography, hydrology, soils, landforms, vegetation, climate, microclimate. Influence of water bodies

UNIT-4 DESIGN OF LANDFORMS IN A SITE & SITE PLANNING PRINCIPLES AND TECHNIQUES

Contours - representation of landforms and landform design, interpolation of contours, slope analysis, uses and function. Grading - Symbols and grading and alignment of paths/roads, angle of repose and use of retaining walls. Grading terraces. Drainage - surface drainage, functional and aesthetic considerations. Site Zoning. Organization of vehicular and pedestrian circulation; parking; street widths; turning radii; street intersections; steps and ramps. Site planning considerations in relation to water systems, sewage disposal, outdoor electrical systems.

UNIT-5 SITE CHARACTERISTICS AND DESIGN REQUIREMENTS& LANDSCAPE EXERCISE

Landscape design of a neighborhood open space (area of 2000 to 3000 sq. meters)

Exploration of site planning options for residential, commercial, office, industrial and mixed-use projects; street network, civic space, and open space planning; emphasis on walkable, mixed-use, transit-oriented sustainable development.

COs & LOs for Site planning & Landscaping Architecture			
Student will be able to apply different methods in landscape practice and incorporate site planning for a specific land use.			
CO1	**Understanding** role and importance of site planning in enhancing quality of building environment	LO1	**Defining** various parameters of site analysis and its importance
		LO2	**Gathering** past information site design, theories
		LO3	**Summarizing** on site and off site factors,
		LO4	**Analysing** different layers of site planning for better design process
		LO5	**Programme** a zoning plan for a given site
CO2	**Learning** about the interrelationship between nature and humans. Role of natural elements in environment	LO1	**Defining** environment terminologies such as ecological balance, eco system, etc.
		LO2	**Extending** the role of environment in construction
		LO3	**Summarizing** elements and principles of landscape
		LO4	**Applying** elements and plant material in design process
		LO5	**Categorizing** plant material & understand their benefits
CO3	**Understanding** the construction techniques of hardscape, contours, landforms and its application on site.	LO1	**Expressing** landform through contour lines
		LO2	**Determining** slope percentage
		LO3	**Calculating** various physical characteristics like grading, drainage pattern
		LO4	**Reflecting** knowledge on techniques of retaining walls, steps, ramps
		LO5	**Managing** to propose plan of water systems, electrical, disposal
CO4	**Awareness** about characteristic of various historical gardens and concepts of urban landscape in design	LO1	**Understanding** the design philosophy behind history of landscape
		LO2	**Analysing** characteristics & features garden styles of different eras
		LO3	**Explaining** various design elements of urban landscape
		LO4	**Reflecting** on different usage of landscaping according to site context
		LO5	**Creating** presentation on historical gardens and example of urban landscape
CO5	**Application** of different methods in landscape practice which incorporate site planning for a specific land use	LO1	**Searching** for a land for landscape development
		LO2	**Exploring** the site by site visits and available secondary data
		LO3	**Applying** the various site planning options to given site
		LO4	**Criticizing** and appraising the existing site and design
		LO5	**Proposing** a site plan with landscape features on given land

REFERENCES:

1. T S S for Landscape Architecture, Mc Graw Hill,Inc, 1995 .
2. Grant W Reid, From Concept to Form in Landscape Design, Van Nostrand Reinhold Company,1993 .
3. Brian Hacket, Planting Design .
4. T.K. Bose and Chowdhury, Tropical Garden Plants in Colour, Horticulture And Allied Publishers,Calcutta, 1991.
5. Motloch, J.L., "Introduction to Landscape Design", Van Nostrand Reinhold Publishing Co., New York, 1991.., McGraw Hill Book Co., New York, 1981.Sam kubba, " Green construction project management and cost oversight", Elseiver, 2010
6. Kevin Lynch , "Site Planning", MIT Press, 1967
7. Time Savers Standards for Site Planning, McGraw Hill, Inc, 1995
8. Richard Untermann and Robert Small, "Site planning for cluster housing", Van NostrandReinholdCompany, 1977
9. Michael Laurie, "An Introduction to Landscape Architecture", Elsevier, 1986
10. TSS for Landscape Architecture, McGraw Hill, Inc, 1995
11. John Ormsbee Simonds, "Landscape Architecture: A manual of site planning & design", McGr

4. Working Drawing (Code – 210626) Objectives –

The course aims to obtain understanding of standards and conventions used for preparation of architectural drawings to develop the skills of preparing various architectural drawings and details used for construction of buildings, drawings in sufficient details such that the contractor is able to construct a building as per the design, Graphical presentation of all the components of a building along with dimensioning and annotations, application of IS Codes, Conventions/ methods of preparing a working drawing along with tabulation of schedules of materials, finishes and hardware/ Linking up working drawings / specifications in an architectural project.

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								
4.	210626	Working Drawing	PAEC-2	-	-	-	-	50	30	20	100	5	1	1	6	**5**	PP	Offline**

UNIT- 1 BUILDING DRAWING

Centre line plan, Foundation plan, Structural grid plan (in case of framed structures), Basement floor plan, Ground floor plan, Typical floor plan, All elevations, All sections: one at least through staircase and one through toilet, Terrace floor plan giving details of surface drawing etc.

UNIT- 2 SERVICES

Sanitation drawings showing fixtures etc, Electrical layout plan, typical wall profiles sections, detailed drawings of special rooms like kitchens, toilets, staircase etc.

UNIT- 3 SPECIFICATION

In addition to the above, students are expected to prepare a detailed clause by chance specifications for at least one of the 3 projects Specifications writing include the following aspects: Materials, Pre and post installation work., Test if any, Mode of measurements, Knowledge of manufacturers specifications as a database for writing specifications for the following materials, based on surveys:

UNIT- 4 MATERIALS

Glass Plywood and laminates Hardware Electrical wires and accessories Water supply and plumbing: fittings and fixtures flooring and cladding.

UNIT- 5 EXERCISE

One working drawing of a previous year architectural design project having load bearing structure with Minimum 150 sq. m. carpet area not exceeding 2 stories. Two details such as doors/windows/railings/kitchen etc.

COs & LOs for Working Drawing **Overall Course Outcome:** Students will be able to develop, draw various architectural drawings and details used for construction of buildings, drawings in sufficient details such that the contractor is able to construct a building as per the design.			
CO1	Student will able to understand the various building drawings.	LO1	**Learn** various building drawing use in working drawing.
		LO2	**Understand** the use of various building drawing.
		LO3	**Apply** various building drawing to own project.
		LO4	**Analyze** the necessity of various building drawing in architectural project.
		LO5	**Draw** various building drawing**.**
CO2	Student will be able to understand and draw various services plan used in architectural project.	LO1	**Study** the various services used in architectural project.
		LO2	**Understand** use of services in architectural project.
		LO3	**Draw** various services plan used in architectural project.
CO3	Student will able to understand and write various specification of material required during execution of a project.	LO1	**Study** the detailed specifications for Materials used Pre and post installation work in architectural project.
		LO2	**Understand** the need of specifications.
		LO3	**Formulate** detailed specifications for any architectural project.
CO4	Students will understand various materials, finishing material used in architectural project.	LO1	**Learn** various building materials used in architectural project.
		LO2	**Understand** use of materials in architectural project.
		LO3	**Analyze** the fitting of materials in project.
CO5	Students will be able to develop working drawing sets for load bearing and a frame structure architectural Design project.	LO1	**Study** about working drawing sets for load bearing and a frame structure architectural Design project.
		LO2	**Understand** use of working drawing sets for architectural project.
		LO3	**Draw** working drawing sets for load bearing and a frame structure architectural Design project.

REFERENCES:

1. Building construction specification – Jack Lerrs
2. Standard specification of state governments
3. Specification in detail –Frank W. Makay
4. Building Drawing – M.G. Shah, CM, Kale, S.Y. Paoui
5. Architectural Working Drawings –Ralph W. Liebing, Mimi Ford.

5 ELECTIVE-III

Objectives –

The course aims to obtain knowledge of fundamental concepts and theories of Housing and apply them in their design projects, various types of Housing and its components, the vocabulary of interior design, interior and furniture design and design movements through history, components of interior space and treatment and finishes for the same, the various components of interior design like lighting, landscaping and furniture.

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.	210611	Housing (Elective - III)	DE- 1	50	10	20	20	-	-		100	3	1	2	2	**3**	PP	Blended* (2/1)

(i) HOUSING

UNIT- 1 INTRODUCTION TO HOUSING AND HOUSING ISSUES.

Housing demand and need, Role of Government and public agencies in Housing development, National housing policy, comparison of housing policies and programmes of developed and developing country, Housing agencies, housing programmes and resources, Housing finance.

UNIT- 2 SOCIO ECONOMIC ASPECTS.

Social factors influencing Housing Design – identity, safety, convenience, access, amenities etc, economic factors -affordability and its relationship to house income, incremental housing concept, Slum Upgrading and sites and services schemes and reconstruction process.

UNIT- 3 HOUSING STANDARDS.

Different types of housing standards – spatial standards, safety standards, standards for amenities, Methodology of formulating standards, UD PFI – guide lines, standard and regulations – DCR – performance standards for housing, TCPO, New norms and amenities

UNIT- 4 MODERN TECHNIQUES IN HOUSING CONSTRUCTION.

Prefabrication techniques –modular house, panelized and precast homes, sustainable practices – zero energy home, eco housing, green homes - Teri – Griha and its rating system, Recent advancement in materials, Design guidelines, Environmental impact of Building materials, Environmental quality.

UNIT- 5 HOUSING DESIGN AND PROCESS.

Traditional housing, row housing, cluster housing – apartments and high-rise housing, gated community, Government housing – HUDCO financed project for economically weaker section, their Advantages and disadvantages. Methods and approaches to housing design. Various stages and tasks in project development – feasibility study, detailed study.

COs & LOs for Housing (210611)			
Overall Course Outcome: The course aims to obtain knowledge of fundamental concepts and theories of Housing and apply them in their design projects, various types of Housing and its components, the vocabulary of interior design, interior and furniture design and design movements through history, components of interior space and treatment and finishes for the same, the various components of interior design like lighting, landscaping and furniture.			
CO1	**Understand** the housing issues and importance of housing development	LO1	**Relate** housing demand & need with its availability
		LO2	**Interpret** the role of government and public agencies in housing development
		LO3	**Analyse** housing policies and programmes
		LO4	**Define** necessary resources and housing finance
CO2	**Relate** the socio economic aspects of site with its housing characteristics	LO1	**List** social factors influencing Housing Design
		LO2	**Demonstrate** the relationship between affordability and household income
		LO3	**Examine** incremental housing concept
		LO4	**Justify** the need of slum rehabilitation
CO3	**Identify** various housing standards, guidelines, regulations, norms, amenities, etc.	LO1	**Define** different types of housing standards
		LO2	**Outline** the methodology of formulating standards
		LO3	**Illustrate** different housing guidelines, standard and regulations- URDPFI, DCR, TCPO,etc
CO4	**Discover** modern techniques for efficient and sustainable housing	LO1	**Define** modern construction techniques
		LO2	**List** sustainable practices and recent advancement building materials
		LO3	**Appraise** different green rating system specific to housing
		LO4	**Summarise** modern housing construction techniques in context of changing scenario and globalization
CO5	**Categorise** different housing design process as per desired requirements	LO1	**Define** types of housing
		LO2	**Analyse** housing project for economically weaker section
		LO4	**Elaborate** design process, stages, tasks, methods, approaches to different type of housing projects

REFERENCES:

1. Kavita Datta and GA. Jones,' Housing and Finance in Developing Countries',Routledge,London,1999.
2. Housing Design –Eugene Henry Klaber – Reinhold publishing corp.
3. Daniel Vallero and Chris Brasier, Sustainable Design – The science of sustainability and Green Engineering;Wiley;2008
4. Thomas E Glavinich; Green Building Constction; Wiley;2008
5. GeofreyK.Payne, Low Income Housing in the Development World, John Wiley and Sons, Chichester,1984.
6. Martin Evans, Housing, Climate and Comfort, Architectural Press, London, 1980
7. An introduction to Urban Housing Design –Graham Towers.

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.	210619	Design Thinking in Architecture(Elective - III)	DE- 1	50	10	20	20	-	-		100	3	1	2	2	**3**	PP	Blended* (2/1)

(ii) DESIGN THINKING IN ARCHITECTURE

UNIT-1 Introduction

Introduction to Design thinking, who are clients, what is customer centric approach of Design, Customer Journey mapping, Brainstorming.

UNIT- 2 Perspectives of Design Thinking

Introduction Lenses for Design Thinking, Ecologically Sensitive Design Solutions, Empathetic Design Solutions, Community Solutions, Post COVID Considerations, Learning from Past, Technological Inputs, Universal Design

UNIT- 3 Tools for Design Thinking

Tools for design thinking, solutions of How to conduct a case study, to do survey, to do research in architecture, to frame the brief/problem, to strategize the brief.

UNIT – 4 Design Setups in Architecture

Introduction Setups in Architecture, Collaborations in Architecture, Scales of setups, Innovations in Business Strategies.

UNIT- 5 Communication, Elevator Pitch and Growth

Introduction Communication, Elevator Pitch and Growth, Branding, Building connections, people skills, Elevator Pitches, Use of Social Media and Website.

COs & LOs for Society, Culture And Architecture (210412)			
Overall Course Outcome: The course aims to obtain knowledge about society, culture, environment, etc. in architecture design and site planning.			
CO 1	Students will be able to **relate** sociology with architecture and planning	LO1	**Define** various cultures and civilizations
		LO2	**Explain** fundamentals of society, culture and politics with reference to architectural history
		LO3	**Discover** forms of historical social organization
		LO4	**Identify** relationship of sociology and architecture
CO 2	Students will be able to **inspect** basics of traditional architecture	LO1	**Define** different architectural forms and models
		LO2	**Illustrate** the supremacy of people on their neighboring built environment
		LO3	**Inspect** the influence of asian tradition on its architectural style
		LO4	**Analyze** the concept of traditional architecture
CO 3	Students will be able to **illustrate** the site specific nature of architectural design	LO1	**Recall** architecture and its context
		LO2	**Outline** social and cultural aspects of building practices
		LO3	**Determine** architecture as an powerful agent to bring changes in society and culture
		LO4	**Conclude** architecture as an identity of a place/site
CO 4	Students will be able to **distinguish** cultural change and indigenous architectural practices	LO1	**Illustrate** transformation of architectural form over a period
		LO2	**Analyze** globalization and localization with the help of suitable examples
		LO3	**Interpret** the role of culture and its impact on architectural identify
CO 5	Students will be able to **apply** rejuvenation in architecture	LO1	**Define** basic terms of architectural rejuvenation
		LO2	**Categorize** concept of renewal, transformation, redevelopment, rejuvenation in architectural context

REFERENCES:

Huckerby, Martin., The Net for Journalists: A Practical Guide to the Internet for Journalists in Developing Countries. UNESCO/Thomson Foundation/ Common wealth Broadcasting Association, 2005.

6. ELECTIVE –IV (Opted from NPTEL)

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			MOOC				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	Assignment	Exam								
6.	-	ELECTIVE –IV	DE- 4	-	-	-	-	-	-		25	75	100	3	2	1	-	**3**	Offline*	MCQ

7. Novel Engaging Course

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								
7.		Novel engagin courses	CLC					50			50	2			2	**1**	SO	Interactive

8. Tour/ Seminar / Workshop/ NASA Training during winter break (Code – 210607)

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								
8.	210607	Tour/ seminar / Workshop/ Train during winter br	SEC- 8	-	-	-	-	50	-		8.	2	-	-	2	**1**	SO	Offline

Study Tour/ Seminar / Workshop/ Training during previous winter break will be evaluated

1. INTELLECTUAL PROPERTY RIGHT (Code – 210610)

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								
9.	**210610**	**Intellectual Property Rights**	**MAC-4**	50	10	20	20	-	-	-	100	2	2	-		Grade	MCQ	Online

UNIT – I: Introduction
Introduction to IPRs, Basic concepts and need for Intellectual Property – Meaning and practical aspects of Patents, Copyrights, Geographical Indications, IPR in India and Abroad. Nature of Intellectual Property, Industrial Property, technological Research, Inventions and Innovations – Important examples of IPR.

UNIT – II: Intellectual Property Rights
The IPR tool kit, Patents, the patenting process, Patent cooperation treaties: International Treaties and conventions on IPRs, TRIPS Agreement, PCT Agreement, Patent Act of India, Patent Amendment Act, Design Act, Trademark Act, Geographical Indication Act.

UNIT – III: Intellectual Property Protections
IPR of Living Species, protecting inventions in biotechnology, protections of traditional knowledge, biopiracy and documenting traditional knowledge, Digital Innovations and Developments as Knowledge Assets – IP Laws, Cyber Law and Digital Content Protection. Case studies: The basmati rice issue, revocations of turmeric patent, revocation of neem patent.

UNIT – IV: Exercising and Enforcing of Intellectual Property Rights
Rights of an IPR owner, licensing agreements, criteria for patent infringement. Case studies of patent infringement, IPR – a contract, unfair competitions and control, provisions in TRIPs,

UNIT- V: Role of Patents in Product Development & Commercialization
Recent changes in IPR laws impacting patents and copy

COs & LOs for Intellectual property Rights- (Code – 210707)			
Overall Course Outcome: Students will be able to **understand** the basic concepts of Intellectual Property Rights and to develop expertise in the learners in IPR related issues and sensitize the learners with emerging issues in IPR and the rationale for the protection of IPR.			
CO1	Students will be able to understand the importance of it in architectural services.	LO1	**Remember** basic concepts of Intellectual Property Rights and to develop expertise in the learners in IPR related issues
		LO2	**Learn** the practical aspects of Patents, Copyrights, Geographical Indications in the practice.
		LO3	**Understand** the IPR in India and Abroad. Nature of Intellectual Property, Industrial Property, technological as per norms.
		LO4	**Analyze the** research, inventions and innovations in IPR.
		LO5	**Evaluating** role of an IPR in comprehensive architectural services.
CO2	Students will be able to apply IPR in architectural services.	LO1	**Remember** basic IPR tool kit, Patents, the patenting process, Patent cooperation treaties among the parties.
		LO2	**Learn** the different legislation in IPR.
		LO3	**Understand** the different acts in IPR.
		LO4	**Analyze** the legislation and acts in architectural practices.
		LO5	**Evaluating** role of IPR legislation and acts in architectural services.
CO3	Students will be able to understand inventions in biotechnology, protections of traditional knowledge, biopiracy and documenting traditional knowledge.	LO1	**Remember** the IPR of Living Species, protecting inventions in biotechnology, protections of traditional knowledge.
		LO2	**Understand** bio piracy and documenting traditional knowledge, Digital Innovations.
		LO3	**Learn** various IP Laws, Cyber Law and Digital Content Protection.
		LO4	**Analyze** the case studies in IPR .
		LO5	**Evaluating** the case studies of IPR in architectural services.
CO4	Students will be able to understand the different legislations applicable to architects, in IPR.	LO1	**Remember** the Rights of an IPR owner, licensing agreements.
		LO2	**Understand** the criteria for patent infringement.
		LO3	**Learn** the role of licensing agreements in architectural service.
		LO4	**Analyze** the case studies of patent infringement.
		LO5	**Evaluating** the case studies of patent infringement in architectural services.
CO5	Students will be able to understand the running of an architect's office and applicable laws, rules and regulations, pitching for projects .	LO1	**Remember** basic recent changes in IPR laws impacting patents and copyrights.
		LO2	**Understand** the intellectual cooperation in the science and allied industry.
		LO3	**Learn** patentable and non-patentable research.
		LO4	**Analyze** the case studies of Patents in Product Development & Commercialization
		LO5	**Evaluating** the case studies of Patents in Product Development & Commercialization in architectural services.