

## MAPPING OF COs WITH POs UG PROGRAMME

Sr No	Sem	Course Code	Course title	Course Outcomes (COs)		Programme Outcomes (POs)
	<b>SEM I</b>	B. ARCH			At the end of the programme students will have	
1	I	101	Architecture Design Studio	CO1	Understanding of the human body in space/ enclosure.	PO1
				CO2	Understanding of their relationship with spaces with reference to scales and proportions.	PO1, PO2 & PO8
				CO3	Developed a language vocabulary along with visualization of a form and volume.	PO1, PO2 & PO3
				CO4	Exposure to architecture, Exposure to architects and their works Buildings, practices, site visits, meeting architects	PO4, PO6, PO7 & PO8
2	I	102	Allied Design Studio (Basic Design) <b>(AS)</b>	CO1	Understanding of the composition fundamentals and acquired knowledge of the Elements and Principles of design.	PO2 & PO3
				CO2	Creatively explored different digital media.	PO7
				CO3	Understanding of the design as a problem-solving act with introduction to visual and product design.	PO3
				CO4	Explored individual and group work.	PO4
3	I	103	Architectural Building Construction & Materials	CO1	Understanding of various elements of a structure, its application, and construction techniques.	PO2
				CO2	Understanding of materials, its properties and application.	PO1 & PO2
				CO3	Understanding of form in three dimensions with stability, aesthetics, optimum use of materials.	PO1, PO2 & PO4
4	I	104		CO1	Understanding of force with its unit and types.	PO2

			Theory & Design of Structures	CO2	Understanding of resolution of forces along different directions and its need.	PO2
				CO3	Determined reactions for various combination of forces.	PO2
5	I	105	Humanities (PoS)	CO1	Gained understanding in the areas of humanities, culture, and tradition in the field of designing and its connection to Architecture.	PO1 & PO8
				CO2	Learned and unlearned in humanities studio work through various modes like group discussions, debates, presentations, and individual narratives.	PO4
				CO3	Understanding of civilizations through the verticals of community development, culture, tradition, religion, gender, and socio-political environments.	PO3 & PO8
				CO4	Understanding of interconnections between ancient habitats and their ways of living to our current systems.	PO3 & PO8
6	I	106	Environmental Studies (LH)	CO1	Understanding of the relationship between natural & built environment, focusing on forest, water, energy, mineral, land & food resources along with ecology, ecosystems, biodiversity, and their co-existence.	PO1, PO2 & PO3
				CO2	Explored building types in different geographic and climatic zones.	PO1, PO2 & PO3
7	I	107	Architectural Representation & Detailing	CO1	Learned the skill of freehand architectural representation.	PO2 & PO3
				CO2	Developed sketching with different mediums and forms of stationery.	PO2 & PO3
				CO3	Learned the essential hand movements and pressure intensity for mediums. Making quick sketches with understanding architectural elements.	PO2 & PO3

8	I	120	College Projects <b>(HP)</b>	CO1	Explored different significant places in Mumbai through site visits and documentation.	PO2 & PO8
				CO2	Enhanced model making skills	PO2 & PO3
				CO3	Developed reading habits and comprehension skills through book review.	PO2 & PO3
9	I	121	Elective <b>(MI)</b>	CO1	Enhanced hand – eye co-ordination and building levels of manual dexterity.	PO2, PO3 & PO4
				CO2	Developed knowledge and skills in architecture, and contribute to others' development, through active participation in classes and bedside teaching.	PO2
				CO3	Understanding of model making techniques like cutting, folding, and molding with different materials and implement them in other subjects.	PO2 & PO3
				CO4	Developed a comprehensive learning process as a response to other team building activities.	PO2 & PO3
				CO5	Develop entrepreneurship skills in profession to handle varied scales of project.	PO4
	<b>SEM II</b>					
1	II	201	Architecture Design Studio	CO1	Understanding of objective & context of the program.	PO1, PO3 & PO8
				CO2	Created environmentally sensitive design with understanding of context and surroundings.	PO1, PO2 & PO8
				CO3	Learned the documentation process through site visits, documentation through text, photography.	PO3, PO4, PO6 & PO8
				CO4	Created representation drawings and supporting drawings with help of software.	PO5
2	II	202	Allied Design Studio (Basic Design) (RJ)	CO1	Understanding of the composition fundamentals and acquired knowledge of the Elements and Principles of design.	PO2 & PO3

				CO2	Creatively explored different digital media.	PO7
				CO3	Understanding of the design as a problem-solving act with introduction to visual and product design.	PO3
				CO4	Explored individual and group work.	PO4
				CO5	Explored other fields of art and design and its relationship with architecture.	PO2 & PO3
3	II	203	Architectural Building Construction & Materials (KB)	CO1	Understanding of timber joinery details w.r.t vernacular architecture.	PO1 & PO2
				CO2	Learned and drafted various types of doors, door details and joinery along with casement window.	PO2 & PO4
				CO3	Studied different types of fenestration and shading devices.	PO2 & PO4
				CO4	Understanding of sill and lintel.	PO2
				CO5	Learned about wooden partition, timber floors, joinery, types of roofs, types of staircases, king post truss and queen post truss.	PO2 & PO4
4	II	204	Theory & Design of Structures	CO1	Understanding of the concept of centroid and moment of inertia and its significance.	PO2 & PO4
				CO2	Understanding of stress and strain and how to evaluate them.	PO2 & PO4
				CO3	Evaluated shear force and bending moment in a structural member under different combination of loads and to understand its significance.	PO2 & PO4
5	II	205	Humanities	CO1	Gained understanding in the areas of humanities, culture, and tradition in the field of designing and its connection to Architecture.	PO1, PO8
				CO2	Learned and unlearned in humanities studio work through various modes like group discussions, debates,	PO4

					presentations, and individual narratives.	
				CO3	Understanding of civilizations through the verticals of community development, culture, tradition, religion, gender, and socio-political environments.	PO3, PO8
				CO4	Gained knowledge and connections drawn - represented through models, digital mediums, or other relevant, innovative techniques	PO3, PO8
6	II	206	Environmental Studies (LH)	CO1	Understanding of climatic zone with case specific example.	PO1 & PO3
				CO2	Understanding of different construction methods and techniques as per climatic zone	PO1, PO2 & PO3
7	II	207	Architectural Representation & Detailing. (AA)	CO1	Acquired representation skills.	PO2
				CO2	Designed a holistic portfolio comprising documentation of a temple precinct site with drawings and details of the architectural structure.	PO2 & PO4
				CO3	Developed skillset for representing their work in design studio.	PO2 & PO4
8	II	220	College Projects (HP)	CO1	Explored different significant places in MUMBAI, visit and document them.	PO8
				CO2	Developed reading habits and comprehension skills through book review.	PO2
9	II	221	Elective (MI)	CO1	Developed problem solving attitudes towards varied situations through widened perspective and efficient methods like teamwork and collaborative abilities.	PO3, PO4 & PO6
				CO2	Understanding of the use of basic tools for drawing, sketching, and drafting.	PO3, PO4 & PO6
				CO3	Developed quick sketching skills.	PO3, PO4 & PO6
				CO4	Understanding of the basic need of a model.	PO3, PO4 & PO6

				CO5	Developed verbal communication and to be able to express oneself freely.	PO3, PO4 & PO6
	<b>SEM III</b>					
1	III	301	Architecture Design Studio (PoS)	CO1	Understanding of built and un-built spaces for multiple activities for a small group of people and relatively larger groups	PO1
				CO2	Understanding of space requirements for various activities - indoor and outdoor	PO4
				CO3	Applied design knowledge to an architectural problem by understanding and documenting the site, architecture, and materials and responding to the same.	PO1 & PO2
				CO4	Designed and detailed out built form and required infrastructure with reference to methods of construction, and materials.	PO3
				CO5	Explored and comprehended subtle and spatial connections through a process driven methodology and create representative drafted drawings.	PO5 & PO8
2	III	302	Allied Design Studio (Interior Design)	CO1	Understanding of space and anthropometry.	PO2
				CO2	Studied context responsive interiors through various case studies.	PO1 & PO2
				CO3	Incorporated design requirements of a residential premise	PO3
				CO4	Explored different materials, textures, colors, patterns, and precise representation of the same.	PO2
				CO5	Integrated with architectural representation studio for creating different representation styles.	PO1 & PO2

3	III	303	Architectural Building Construction (LH)	CO1	Understanding of the structural systems - load bearing and framed.	PO2, PO3
				CO2	Detailed the evolution of the structural systems - R.C.C. as a material-its composition, properties, various grades, and their implementation.	PO2, PO3
				CO3	Understanding various components in a R.C.C. framed structure like footing, column, beam, slab, and staircase.	PO4
4	III	304	Theory & Design of Structures (AC)	CO1	Understanding of the concept of simple bending.	PO2 & PO4
				CO2	Evaluated deflection of structural member subjected to loading.	PO2 & PO4
				CO3	Understanding of the concept of direct and bending stress.	PO2 & PO4
				CO4	Understanding of basics of reinforced cement concrete and to evaluate sizes of different structural members by using thumb rule or relevant IS code.	PO2 & PO4
5	III	305	Humanities 3 (KB)	CO1	Comprehended the diverse phases of architectural development throughout the medieval ages in Europe.	PO1 & PO2
				CO2	Effectively analyzed, synthesized, and consolidated their understanding of the subject matter.	PO1 & PO2
				CO3	Deciphered and constructed a discourse in understanding Early Christian church, Byzantine, Romanesque, Gothic, Renaissance and Baroque Architecture.	PO1, PO2 & PO4
				CO4	Developed an appreciation for both tangible and intangible heritage connected to history.	PO1 & PO8
6	III	306	Environmental Studies (LH)	CO1	Understanding to build climate responsive structures.	PO1, PO2
				CO2	Understanding of sun path both in 2D & 3D to design accordingly.	PO1, PO2, PO3 & PO4

				CO3	Learned and developed various passive design strategies for different climatic zones.	PO3 & PO4
				CO4	Understanding of natural ventilation and various techniques to achieve it.	PO1, PO3 & PO4
				CO5	Understanding the role of water as an element in function, design, and natural cooling.	PO1, PO3 & PO4
7	III	307	Architectural Representation & Detailing (KB)	CO1	Developed ability of presenting 3D forms in exploded isometric and axonometric view.	PO2
				CO2	Developed ability to prepare and present architectural elements/buildings 1-point and 2-point perspective views.	PO2
				CO3	Developed ability to make plans, elevations, and sections of architecture elements/buildings.	PO2 & PO3
				CO4	Composed portfolio with drawings to explain architectural design.	PO2 & PO3
8	III	308	Architectural Building Services1 (Aws)	CO1	Understanding of basic plumbing services required for a building and interior spaces.	PO1, PO2
				CO2	Learned various types of fixtures required for water supply and drainage system.	PO1 & PO2
				CO3	Calculated water requirement for residential & commercial use.	PO2 & PO3
				CO4	Learned standard space requirements for a toilet and ideal positions of various fixtures and location of supply pipes suitable to services layout.	PO2
				CO5	Understanding of distribution of water to individual toilets through terrace looping	PO2
9	III	309	Architectural Theory 1 (KB)	CO1	Gained insight and comprehension of architectural concepts through the study of architectural literature.	PO1
				CO2	Recognized architecture as the evolution of dynamic ideas throughout history, reflecting	PO1



					the spirit and context of their respective eras, while also having the ability to chronologically trace the progression of these ideas.	
				CO3	Familiarized and improved comprehension about architecture using theoretical texts and architectural criticism.	PO1
				CO4	Incorporated engaging techniques like sketching, quizzes, debates, review writing, and storyboarding to improve their architectural vocabulary and effectively coordinate and consolidate their understanding of the subject.	PO2 & PO4
				CO5	Fostered active learning, critical thinking, and creative expression leading to a more comprehensive grasp of architectural concepts and principles.	PO3
10	III	320	College Projects 3 (HP)	CO1	Learned computer skills to develop various representation techniques and drawings.	PO5
				CO2	Explored different significant places in Mumbai through site visits and documentation.	PO8
				CO3	Developed reading habits and comprehension skills through book review.	PO2 & PO3
11	III	321	Electives 3 (MI)	CO1	Understanding the process of making and articulating in architecture through the study of different regions and concepts.	PO, PO3 & PO7
				CO2	Expanded their knowledge of documenting structures and understanding the photographic aspects with techniques and theories.	PO2, PO3 & PO7
				CO3	Understanding the meaning of space and its response to the light.	PO2, PO3 & PO7
				CO4	Understanding traditional approaches to built forms responding to the culture.	PO2, PO3 & PO7

	<b>SEM IV</b>					
1	IV	401	Architecture Design Studio <b>(PoS)</b>	CO1	Understanding of the built and unbuilt spaces for cluster and communities, and developed research skills for survey research and case study.	PO2 & PO4
				CO2	Understanding of the functioning of community spaces in rural areas/semi urban areas and studied principles of design, construction, and technology based on tradition and experience.	PO8
				CO3	Comprehended community requirements and evolved a design that includes the community in the entire process.	PO2
				CO4	Demonstrated and articulated design skills through an iterative process towards conserving the natural surroundings and social fabric suitable for communities	PO1 & PO3
				CO5	Applied design knowledge to an architectural problem by understanding and documenting the site, local vernacular architecture, and traditional methods of construction.	PO1, PO3 & PO5
2	IV	402	Allied Design Studio (Interior Design)	CO1	Understanding of circulation of spaces and evolved anthropometry for a commercial space.	PO2
				CO2	Incorporated design requirements of a commercial space.	PO3
				CO3	Explored different materials, textures, colors, patterns, mood board, and precise representation based on the theme of the same.	PO1, PO2 & PO3
				CO4	Understanding the impact of the brand and its association with large group of users.	PO8

				CO5	Sensitivity towards the understanding of psychological requirement of user for the space.	PO1 & PO8
3	IV	403	Architectural Building Construction (LH)	CO1	Understanding of the concepts of framed structures in steel for low rise medium span building.	PO3
				CO2	Understanding and created the methods of construction of various components of steel structures along with emphasis on aesthetics and building technology.	PO2 & PO1
4	IV	404	Theory & Design of Structures	CO1	Understanding of the type of column and evaluated load carrying capacity of column.	PO2
				CO2	Evaluated shear force and bending moment for fixed and continuous beams and to understand its significance.	PO2
				CO3	Understanding of the basics of steel structure.	PO2
				CO4	Understanding of the suitability of foundation for different types of soils.	PO2
5	IV	405	Humanities (KB)	CO1	Comprehended the diverse phases of architectural development from Vedic to medieval period of Indian history.	PO1 & PO2
				CO2	Effectively analyzed, synthesized, and consolidated their understanding of the subject matter.	PO1, PO2 & PO3
				CO3	Deciphered and constructed a discourse in understanding Temple, Indian rock cut, Buddhist, Indo-Islamic and Mughal architecture.	PO2 & PO4
				CO4	Developed an appreciation for both tangible and intangible heritage connected to history.	PO1 & PO8
6	IV	407	Architectural Representation & Detailing	CO1	Understanding of various methods of land surveying and documentation.	PO1 & PO2
				CO2	Learned application of various tools and equipment required for land surveying.	PO2

				CO3	Brief understanding of modern methods of surveying.	PO1 & PO2
				CO4	Developed ability to read survey maps, land features and undulation of ground.	PO1 & PO2
				CO5	Learned application of chain survey and triangulation, transverse survey, and theodolite.	PO1 & PO2
7	IV	408	Architectural Building Services <b>(AWS)</b>	CO1	Understanding of the basic of plumbing services specially drainage, required for a building and interior spaces.	PO1 & PO2
				CO2	Learned about various components of sewage systems, different types of W.C, traps, pipe sizes and slopes.	PO2
				CO3	Prepared drainage layout for a building showing rainwater and storm water drainage system with calculations for invert levels.	PO2 & PO3
				CO4	Learned about sewage treatment systems, their working, and components.	PO2
8	IV	409	Architectural Theory <b>(KB)</b>	CO1	Developed ways to express architectural concepts with precision and clarity and used accurate architectural terminology to explain the intricate relationship between design principles and ideas.	PO1 & PO2
				CO2	Effectively articulated the thought process behind one's own designs, which are being executed across multiple studios.	PO1 & PO2
				CO3	Developed understanding of using references and citation as an essential tool of writing and to clearly understand the issues and consequences of plagiarism.	PO5 & PO7
				CO4	Enhanced presentation skills, communication skills and enabling students to work in groups, fostering effective group collaboration.	PO4, PO5 & PO6
9	IV	420	College Projects <b>(HP)</b>	CO1	Learned computer skills to develop various representation techniques and drawings.	PO5

				CO2	Explored different significant places in Mumbai through site visits and documentation.	PO8
				CO3	Developed reading habits and comprehension skills through book review.	PO2 & PO3
10	IV	421	Elective <b>(MI)</b>	CO1	Understanding of the process of making and articulating in architecture through the study of different regions and concepts.	PO2, PO3 & PO7
				CO2	Expanded their knowledge of documenting structures and understood the photographic aspects with techniques and theories.	PO2, PO3 & PO7
				CO3	Understanding of the meaning of space and its response to light.	PO2, PO3 & PO7
				CO4	Understanding of the traditional approaches to built forms responding to the culture.	PO2, PO3 & PO7
	<b>SEM V</b>					
1	V	501	Architecture Design Studio <b>(AS)</b>	CO1	Valued the potential of urban land and thus optimization of space utilization.	PO1 & PO2
				CO2	Learned to design medium size, storied and large span buildings of urban functions.	PO2
				CO3	Developed suitable architectural forms, and composition in response to culture and society.	PO3, PO7 & PO8
				CO4	Learned about related services and infrastructure requirements.	PO2
				CO5	Applied passive sustainability measures on their designs.	PO1
2	V	502	Allied Design Studio (Landscape Design)	CO1	Understanding of landscape design to design unbuilt spaces of the project.	PO1
				CO2	Understanding of the elements and principles of landscape design and their application at various scales.	PO2 & PO4
				CO3	Learned ways of integrating built and unbuilt environments with	PO1 & PO3

					various design elements & principles.	
				CO4	Learned various modes of representation of design of unbuilt spaces to convey design ideas.	PO3, PO4 & PO5
				CO5	Applied the elements & principles of Landscape on ongoing architectural Design	PO3, PO4 & PO5
3	V	503	Architectural Building Construction (KB)	CO1	Developed understanding of theory of foundation design.	PO1 & PO2
				CO2	Learned applications of different types of shallow foundation.	PO2 & PO3
				CO3	Learned application of buoyant foundation.	PO1, PO2 & PO3
				CO4	Learned application of raft foundation.	PO2 & PO3
				CO5	Developed understanding of canopies and building skin for frame structure like curtain wall glazing.	PO1, PO2 & PO3
4	V	504	Theory & Design of Structures	CO1	Understanding of the steel table and readily available steel sections in market.	PO2
				CO2	Understanding of the design of structural members using steel table.	PO2
				CO3	Understanding of the various types of joints.	PO2
5	V	505	Humanities 5	CO1	Understanding of the modern movements in architecture till 1st decade of 21 <sup>st</sup> C. of the west and India.	PO2, PO3 & PO4
				CO2	Learned architectural evolution influenced by developments in technology and structural systems.	PO2
				CO3	Learned critical and philosophical influences on architecture after the 1980s.	PO3 & PO4
				CO4	Learned art trends till 1st decade of 21 <sup>st</sup> C. of the west and India.	PO2 & PO3
				CO5	Understanding of the impact of the regional factors on architecture.	PO1, PO2 & PO3

6	V	507	Architectural Representation & Detailing <b>(AS)</b>	CO1	Estimated the quantities of load bearing and RCC structures using their own design.	PO2
				CO2	Assessed their own design with respect to the project's financial viability.	PO3 & PO6
				CO3	Completed the rate analysis and understood the method of arriving at rates.	PO2
				CO4	Written the specifications.	PO2
				CO5	Articulated the material and construction techniques used in their own project while writing the specifications.	PO3 & PO6
7	V	508	Architectural Building Services <b>(MH)</b>	CO1	Understanding of the fundamentals of electricity, sources, generation, and distribution.	PO1, PO3 & PO4
				CO2	Studied various artificial lighting systems and their lux levels.	PO1, PO3 & PO4
				CO3	Learned the concepts and terms of acoustics.	PO1, PO3 & PO4
				CO4	Studied different types of auditoriums and learned to design one using ray diagrams and calculate the reverberation time.	PO1, PO3 & PO4
8	V	509	Architectural Theory 3 <b>(PoS)</b>	CO1	Understanding of the fundamentals of theoretical architectural research, its objectives, and its essential methodologies.	PO2 & PO4
				CO2	Developed the attitude of critical thinking.	PO3
				CO3	Developed reflective reasoning, the analysis, assessment, dispositions, skills and abilities and obstacles or barriers to critical thoughts.	PO3 & PO4
				CO4	Written pieces that are argumentative to be able to convey with clarity and effectiveness alternative and individualistic thinking about architecture.	PO8

9	V	520	College Projects <b>(HP)</b>	CO1	Learned computer skills to develop various Representation techniques and drawings.	PO5
				CO2	Explored different significant places in Mumbai, visit and document them.	PO8
				CO3	Develop reading habits and comprehension skills through book review.	PO2 & PO3
10	V	521	Elective <b>(MI)</b>	CO1	Learned and developed different ways of building temporary buildings along with the materials and details used for the same.	PO2, PO3 & PO7
				CO2	Understanding of the process of documentation, distress mapping and proposed drawings.	PO2, PO3 & PO7
				CO3	Understanding of the use of plantation in different design scenarios.	PO2, PO3 & PO7
	SEM VI					
1	VI	601	Architecture Design Studio	CO1	Valued the potential of urban land and thus optimization of space utilization	PO1 & PO2
				CO2	Learned to design large scale, storied and large span buildings of urban institutional buildings	PO2
				CO3	Developed suitable architectural forms, and composition in response to culture and society	PO3, PO7 & PO8
				CO4	Learned about related services and infrastructure requirements	PO2
				CO5	Applied passive and active sustainability concepts on their designs.	PO1
2	VI	602	Allied Design Studio (Landscape Design) (TJ)	CO1	Understanding of various climatic zones, natural layers, and their impact on design strategies	PO2, PO3, PO4 & PO5
				CO2	Investigated and demonstrated the principles of site analysis & planning in landscape design.	PO1, PO3 & PO5
				CO3	Applied the elements & principles of Landscape on ongoing architectural Design.	PO1, PO3 & PO5



				CO4	Understanding construction working details in landscape with respect to materials, foundations, irrigation, drainage, and lighting.	PO2 & PO3
				CO5	Learned about forms of vegetation, identifying factors, benefits and as design elements.	PO\$, PO5 & PO6
3	VI	603	Architectural Building Construction (KB)	CO1	Developed understanding advanced floor systems in RCC framed structure.	PO1 & PO2
				CO2	Learned application of flat slabs, ribbed slabs, diagrid slab and waffle slabs.	PO2 & PO3
				CO3	Developed basic understanding of precast and prefabricated building elements.	PO1, PO2 & PO3
				CO4	Learned application of precast elements and their joinery details.	PO2
4	VI	604	Theory & Design of Structures (AC)	CO1	Understanding of the various constituents of concrete.	PO2
				CO2	Understanding of the various operations in concrete.	PO2
				CO3	Designed structural members of building.	PO2
5	VI	605	Humanities (TJ)	CO1	Understanding of architecture with reference to social issues related to urbanization.	PO3 & PO8
				CO2	Understanding of globalization & its effect on urban life.	PO2 & PO3
				CO3	Learned about major trends and pace of urbanization in different urban areas of India.	PO3 & PO4
				CO4	Learned and analyzed problems arising out of rapid urbanization.	PO4 & PO8
				CO5	Understanding of urban issues like transport, heritage, public health, public housing, with respect to Mumbai Metropolitan Region (MMR).	PO1 & PO8
6	VI	607	Architectural Representation & Detailing (RP)	CO1	Understanding of the process & sequence of construction and the importance and detail requirements of "Good for Construction" drawings.	PO2 & PO3

				CO2	Understanding of the role of materials and detailing keeping in mind, climatic conditions, building aesthetics and its users.	PO2 & PO1
7	VI	608	Architectural Building Services  <b>(MH)</b>	CO1	Understanding of the process of water supply for high rise buildings.	PO2 & PO3
				CO2	Studied high rise electricity.	PO2 & PO3
				CO3	Understanding of the vertical transportation system – Lifts carrying capacity and travel time, grouping of lifts.	PO2 & PO3
				CO4	Understanding of the fire protection study of fire regulations, code of safety combustibility and fire resistance of building materials along with design consideration for fire safety.	PO2 & PO3
8	VI	620	College Projects <b>(HP)</b>	CO1	Learned computer skills to develop various representation techniques and drawings.	PO5
				CO2	Explored different significant places in Mumbai through site visits and documentation.	PO8
				CO3	Developed reading habits and comprehension skills through book review.	PO2 & PO3
9	VI	621	Elective <b>(MI)</b>	CO1	Learned and developed different ways of building temporary buildings and the materials and details used for the same.	PO2, PO3 & PO7
				CO2	Understanding of the process of documentation, distress mapping and proposed drawings.	PO2, PO3 & PO7
				CO3	Understanding of the use of plantation in different design scenarios.	PO2, PO3 & PO7
	SEM VII					
1	VII	701	Architecture Design Studio <b>(HP)</b>	CO1	Designed housing schemes in urban area, along with necessary infrastructure, services, and amenities.	PO1, PO2 & PO3
				CO2	Understanding of the typologies of housing in Urban Areas.	PO2

				CO3	Understanding of the quantitative and qualitative aspects of mass housing.	PO3 & PO8
				CO4	Understanding user aspirations and user affordability.	PO8
				CO5	Represented the design ideas effectively as per the current professional system.	PO4, PO5 & PO6
2	VII	702	Allied Design Studio (Urban Design) <b>HP</b>	CO1	Understanding of a range of factors involved in the evolution of cities encompassing cities from ancient to the modern period.	PO2
				CO2	Understanding of the different allied disciplines which contribute to shaping cities. Studied contributors not only from planning /designing background but also from sociologists, environmentalist, writers, etc. background.	PO1 & PO2
				CO3	Explored various methods to map cities, delayer, and analyze various aspects in City design.	PO2 & PO5
				CO4	Understanding of the basic hierarchy and framework for policies and schemes related to urban planning.	PO2 & PO8
	VII	703	Architectural Building Construction 7 (KB)	CO1	Developed understanding of deep foundation, its application and execution process.	PO1 & PO2
				CO2	Learned application of various types of pile foundation.	PO1 & PO2
				CO3	Designed pile cap and grouping with reinforcement details along with calculations determining pile cap size and other specifics.	PO2 & PO3
				CO4	Learned about multiple basements and parking, their purpose, functions, and challenges while executing them.	PO1 & PO2
				CO5	Developed understanding of various techniques to control and monitor ground water and soil condition during construction.	PO1

				CO6	Understanding of the design solutions for earthquake resistance buildings.	PO1, PO2 & PO3
				CO7	Developed understanding of high-rise structural systems, building elements and evolution of construction materials.	PO1 & PO2
4	VII	704	Theory & Design of Structures 7 (AC)	CO1	Understanding of the different types of deep and shallow foundations.	PO2
				CO2	Understanding of the necessity of retaining wall and to evaluate size of different components of retaining wall.	PO2
				CO3	Understanding of the theory and principles of structural design of tall buildings.	PO2
5	VII	707	Architectural Representation & Detailing (RP)	CO1	Understanding of the specifications with relation to the process, detailing and quality of a particular work item.	PO2
				CO2	Understanding of the development plan in terms of the various land uses, existing natural heritage, infrastructure with respect to the needs of the society.	PO1 & PO2
				CO3	Understanding of the building development rules for designing buildings keeping in mind the basic and fundamental needs and comfort of the user.	PO1, PO2 & PO7
				CO4	Understanding of the process and requirements of making approval drawings.	PO2
				CO5	Understanding of the development of a region and the requirements of developing various types of buildings typologies.	PO1 & PO2
6	VII	708	Architectural Building Services (KAS)	CO1	Understanding of the need for comfortable conditions in buildings and basics of mechanical ventilation systems.	PO2 & PO6
				CO2	Understanding of the working of the refrigeration cycle system and variant refrigerant volume and variant refrigerant flow system.	PO2, PO6 & PO8

				CO3	Understanding of the mechanism for chilled water system and ducting for designing space for entire packaging unit system.	PO2, PO3, PO5 & PO6
				CO4	Understanding AC filter, fans & propellers types and working mechanism and its importance in HVAC System.	PO2 & PO6
				CO5	Learned importance of heating system in few regions, its types and working of different kind of heating systems.	PO1, PO2, PO3 & PO6
7	VII	710	Professional Practice 1 (IN)	CO1	Understanding of the role of an Architect as a professional along with the responsibilities, duties, and liabilities of the architect.	PO6, PO7 & PO8
				CO2	Understanding and appreciation of the ethical, legal, and technical standards of practice and registration procedures.	PO6, PO7 & PO8
				CO3	Understanding of the office structure, set up, administration and task allocation within the profession of Architecture.	PO4 & PO7
8	VII	620	College Projects (IN)	CO1	Eased the process of research to be done and the tools and techniques to be used for collecting, analyzing, and interpreting the data required.	PO3
				CO2	Understanding of the proper analysis of every aspect and accurate portrayal of findings of the project.	PO2 & PO3
				CO3	Familiarity with the research topic by explaining each concept associated with it.	PO3
				CO4	Understanding of the reliability and validity of the research work.	PO3
				CO5	Evaluated every factor of the research proposal and highlight it in detail.	PO3
9	VII	621	Elective (MI)	CO1	Learned and understood the process of documentation of heritage structures.	PO2, PO3 & PO7
				CO2	Acquired the importance of cultural heritage in policy rating	PO2, PO3 & PO7

					in various government and semi-government sectors.	
				CO3	Understanding of the need of management and its importance in construction projects.	PO2, PO3 & PO7
				CO4	Basic understanding of sustainability, importance of green buildings and need for green buildings.	PO2, PO3 & PO7
				CO5	Explored and learned climate consultant softwares like Andrew marsh.	PO2, PO3 & PO7
	<b>SEM VIII</b>					
1	<b>VIII</b>	811	Professional Training	CO1	Opportunity to work alongside experienced professionals and learn from them while working on real-world projects and tasks.	PO4, PO5, PO6 & PO7
				CO2	A focus and sensitivity needed towards providing comfortable and safe spaces, developed model making skill and developed understanding of the different types of sites (topography).	PO1 & PO8
				CO3	Comprehended the various stages of evolution in architecture to analyze, coordinate, and compile their understandings.	PO4, PO5, PO6 & PO7
				CO4	Deciphered and constructed a discourse in understanding of architecture.	PO7
				CO5	Gained practical experience in the field and learn about the day-to-day work of an architect.	PO6 & PO7
	<b>SEM IX</b>					
1	<b>IX</b>	901	Architecture Design Studio 8 (MH)	CO1	Established human connectivity in transit-oriented development /Commercial/Recreation and strategically located and bifurcated the pedestrian and vehicular entry and exit and have also identified various	PO1, PO2 PO3 & PO4

					circulation patterns and connectivity.	
				CO2	Facilitated sustainable development in the designs.	PO1 & PO8
				CO3	Learned team spirit by working in groups and at individual level.	PO4, PO5 & PO6
				CO4	Analyzed various layers of site and incorporated inferences of site analysis in site planning and design strategies.	PO1, PO2, PO3, PO4 & PO8
				CO5	Incorporated appropriate construction details and services to understand the technicalities of the project.	PO3 & PO2
2	IX	902	Allied Design Studio 8 (Urban Design) (MH)	CO1	Observed, documented, and analyzed physical characteristics of urban fabric.	PO1, PO2 & PO3
				CO2	Understood co-relationship between land-use, building-use and building condition patterns.	PO2 & PO3
				CO3	Introspected micro-level planning through the lenses of walkability, eyes on the street and infrastructure.	PO2 & PO3
				CO4	Studied and examined urban theories of Kevin Lynch, Gordon Cullen, etc. also planning strategies adopted by various cities.	PO2 & PO3
				CO5	Read a city through mapping and surveying techniques.	PO1, PO2 & PO3
3	IX	903	Architectural Building Construction 8	CO1	Understanding of long span structures and its application.	PO1 & PO2
				CO2	Understanding of cables structures and its application.	PO1 & PO2
				CO3	Understanding of folded plates and its application.	PO1, PO2 & PO4
				CO4	Understanding of shell structures and its application.	PO1, PO2 & PO4
				CO5	Understanding of tensile and tensegrity structure and its application.	PO1 & PO2
				CO6	Explored materiality and advantages of various materials to span larger structures.	PO1 & PO2

4	IX	904	Theory & Design of Structures 8 (AC)	CO1	Understood behavior of long span structures.	PO2
				CO2	Understood concept of portal frame and space frame.	PO2
				CO3	To understood types of prestress concrete and its applications.	PO2
5	IX	906	Environmental Studies (KB)	CO1	Thorough understanding of concepts of environment and practical application of environmental studies.	PO1, PO2 & PO3
				CO2	Studied various green rating certification and their parameters.	PO2 & PO4
				CO3	Studied NBC chapter 11	PO2
				CO4	Studied ECBC for commercial and residential projects.	PO2
				CO5	Thorough understanding of IGBC and GRIHA along with green rated materials.	PO2 & PO4
6	IX	908	Architectural Building Services (RP)	CO1	Understood advanced services for specific functions / building types, specialized requirements and / or climatic conditions.	PO2, PO1 & PO3
				CO2	Understood building services, information systems, security systems and its integrated management.	PO2 & PO5
				CO3	Understood services, infrastructure, and amenities for public spaces.	PO1 & PO2
				CO4	Explored and learned climate consultant softwares like Andrew marsh.	PO1, PO2 & PO5
7	IX	910	Professional Practice 3 (IN)	CO1	Understood the various tools and methodologies used during design, approval, documentation, and construction phases of a project.	PO1, PO6, PO7
				CO2	Understood the legal and legislative underpinnings of the profession.	PO7
				CO3	Understood and appreciate the ethical, legal, and technical standards of practice, the principles, and procedures for	PO2, PO6, PO7



					the management of projects and the ability to apply cost control techniques.	
8	IX	911	Design Dissertation 1 (PoS)	CO1	Comprehensive research on the topic selected by them.	PO1 & PO8
				CO2	Recognized a topic of their choice and worked towards research through every aspect of that topic.	PO1
				CO3	Ideated on all the aspects required to research into a topic, most importantly framing the architectural question before the process of design.	PO2 & PO3
				CO4	Compiled research study into a book.	PO5 & PO7
9	IX	921	Elective 8 (KB)	CO1	Learned formats of academic writing and dissertation book formatting as per university standards.	PO5 & PO7
				CO2	Learned basics of GIS	PO2 & PO5
				CO3	Studied about philosophies of representation of various eminent architects.	PO1 & PO2
				CO4	Learned and designed panel formats for their design dissertation.	PO5
				CO5	Learned basics of InDesign software for dissertation book design.	PO5
10	IX	922	Elective 9 (MI)	CO1	To introduce the Basic Fundamentals and Significance of Cultural Heritage.	PO2, PO3 & PO7
				CO2	Understanding the role played by human resource management considering people being the most important resource of any organization.	PO2, PO3 & PO7
				CO3	To achieve the basic understanding of sustainability, importance of green buildings and need for green buildings.	PO2, PO3 & PO7
	<b>SEM X</b>					
1	X	1006	Environmental studies (KB)	CO1	Learned Revit green building studio and understood ways of using it for a design project.	PO1 & PO5

				CO2	Understood simulations for orientation of the building, selection of materials, energy analysis, life cycle analysis, post occupancy measures.	PO1 & PO5
				CO3	Evaluated climatic and site conditions for working on their DD site analysis model.	PO1, PO3 & PO5
				CO4	Applied passive design strategies for their structure with calculations.	PO3
2	X	1007	Architectural Representation & Detailing 8 (RP)	CO1	Understanding of the requirements of site and site services with respect to student's design dissertation topic and site selected.	PO2 & PO3
				CO2	Understanding the role of materials and detailing keeping in mind, climatic conditions, building aesthetics and building typology.	PO1, PO2 & PO3
				CO3	Understanding types of spaces, construction detailing, infrastructural requirements and making detailed construction drawings as per student's design.	PO2, PO3 & PO5
3	X	1009	Architectural theories 4 (PoS)	CO1	Understood the effects of contemporary thought in society and culture today, and its impact on architectural design. Understood the theory as an academic discipline.	PO1, PO2 & PO3
				CO2	Understood the significance of post-modern and post millennial discourses in architecture. Developed a post-modern world view.	PO4
				CO3	Understood ideas from outside architecture that have informed current architectural discourse - philosophy, sociology, psychology, feminism, art, cultural and critical theory, etc.	PO1 & PO2
				CO4	Learned from assignments focused on designing architectural/ urban solutions	PO3, PO5, PO7 & PO8

					that evolve from a theoretical analysis.	
4	X	1010	Professional Practice 3 (IN)	CO1	Understood the various tools and methodologies used during design, approval, documentation, and construction phases of a project.	PO6 & PO7
				CO2	Understood the legal and legislative underpinnings of the profession.	PO7
				CO3	Understood and appreciated the ethical, legal, and technical standards of practice, the principles, and procedures for the management of projects and the ability to apply cost control techniques.	PO2, PO6 & PO7
5	X	1012	Advance Building Construction & Structures	CO1	Understanding various Structural systems and methods of construction	PO1, PO2 & PO3
				CO2	Ability to analyze and select building material and construction technique for a specific type of building	PO1, PO2 & PO3
6	X	1011	Design Dissertation 2	CO1	Developed the design as per the design objectives and design brief submitted in the report.	PO1, PO2 & PO3
				CO2	Executed the design process based on their research and identified programme interventions.	PO3 & PO8
				CO3	Represented detailed drawings of their design through plans, sections, views, elevations, and architectural representative detailing – worked out by the student	PO2, PO3, PO5 & PO7
7	X	1021	Elective 10	CO1	Understanding of the advanced services for specific functions / building types, specialized requirements and / or climatic conditions.	PO2, PO3 & PO7
				CO2	Understanding of the building services, information systems, security systems and its integrated management.	PO2, PO3 & PO7

				CO3	Understanding of the services, infrastructure, and amenities for public spaces.	PO2, PO3 & PO7
				CO4	Explored and learned climate consultant softwares like Andrew marsh.	PO1 & PO5

### **MAPPING OF COs WITH POs PG PROGRAMME**

<b>M. Arch SEM I</b>						
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1	I	TH-01	Management Theories - Principles & Practices (KAS)	CO1	Assessed managerial practices and standards of organization	PO2, PO7 & PO8
				CO2	Learned management cycle of planning, organizing, controlling, and leading for completion of task.	PO2 & PO7
				CO3	Learned types of management and different levels of organization.	PO2
				CO4	Learned about qualities of project manager, selection, and training process of project manager.	PO2 & PO7
				CO5	Learned the theories of communication skills in management.	PO4
2	I	TH-02	Legal Framework for Construction (KAS)	CO1	Learned about the importance of the Architect's Act 1972 with its amendments for constructional practices.	PO2 & PO8
				CO2	Knowledge of legal procedure for regulations in construction section by studying Maha RERA.	PO2 & PO8
				CO3	Learned different practices in and outside India in construction sector.	PO2 & PO8
				CO4	Understanding of various environmental laws and contracts in India.	PO2 & PO8
3	I	TH-02	Project Planning & Scheduling, Monitoring & Control (KAS)	CO1	Understanding of different techniques for project planning and scheduling through software learnings.	PO5 & PO6
				CO2	Learned effectiveness of project scheduling on cost and quality of the construction project.	PO6
				CO3	Learned different aspects of quality management and safety management.	PO7

				CO4	Learned practical application of project scheduling tools to the given construction project.	PO5
4	I	ST-01	Construction Materials And its Management (AWS)	CO1	Learned different construction materials and techniques through case study of an ongoing project and analyzed the impact of delays on project time, cost, and quality in relation with materials as a team.	PO1, PO2, PO4 & PO6
				CO2	Understanding of material classification and logistics.	PO3
				CO3	Understanding of how store management is done through different methods.	PO2 & PO3
5	I	ST-02	Computer Application in Construction Management (KAS)	CO1	Used different software for professional readiness.	PO5
				CO2	Learned project estimating software with its application.	PO5
				CO3	Solved different project managerial problems by using project management software.	PO2 & PO5
6	I	EL-01	Elective - 01 (UM)	CO1	Learned about the causes of damages in different types of structures.	PO2 & PO3
				CO2	Understanding of the materials used for maintenance and repairs depending on the type of damage.	PO2 & PO3
				CO3	Learned the process of structural auditing and budgeting for the same	PO2 & PO3
7	I	EL-02	Elective –02 (UM)	CO1	Understanding of the various development control regulations pertaining to redevelopment projects.	PO2 & PO3
				CO2	Learning the process of preparation of a project feasibility report of redevelopment projects.	PO2 & PO3
	<b>M.Arch</b>					

SEM II						
1	II	TH-04	Project Accounts and Economics (KAS)	CO1	Assessed the role of accounting in the project management.	PO2,
				CO2	Learned different types of accounting systems and preparation of financial statement for the company.	PO2 & PO5
				CO3	Analyzed financial statement, balance sheet of the company and to prepare report.	PO2 & PO5
				CO4	Learned different accounting practices in India.	PO2 & PO7
				CO5	Learn formulas and calculations to know product roadmap tool in sustainable practices of project management.	PO8
2	II	TH-05	Contract Management (KAS)	CO1	Learned broad concept of law of contracts.	PO2
				CO2	Learned different types of contracts, roles, and obligations of involved parties in the contract.	PO2 & PO8
				CO3	Learned contract formation and contract administrative work by using relevant software.	PO5
				CO4	Demonstrated contract's application in construction project through case studies.	PO2 & PO7
3	II	TH-06	Construction Equipment and Personal Management (KAS)	CO1	Knowledge of different kinds of construction equipment to mobilize projects on the site.	PO2
				CO2	Learned theories and practices for hiring equipment, estimating cost for life cycle of equipment including its maintenance.	PO2
				CO3	Learned to calculate depreciation value, replacement and hiring cost to control cost of the	PO5 & PO6

					project along with project schedule.	
				CO4	Learned importance of Human resources in the construction industry. It's role and responsibility, training, and recruitment process.	PO4 & PO6
				CO5	Understanding of human resources to resolve labour issues and to develop industrial relations for sustainable industrial practices.	PO4 & PO6
4	II	ST-03	Advance construction methods and techniques (AwS)	CO1	Researched in depth and analyzed construction technique and other pertinent aspects of a chosen project, evaluate the progress of work intended for the students to acquire an in depth understanding of the various complexities and aspects of the major types of advanced construction techniques of high rise, prefab, and long span structure of a project during a project lifecycle.	PO2, PO3, PO4, PO5, PO6 7 PO7 & PO8
				CO2	Understanding of the concept of modular construction, its manufacturing processes, construction detailing, and special equipment's required for its execution. Study the advantages & disadvantages of the system with reference to conventional construction technology.	PO2, PO4, PO5 & PO8
				CO3	Understanding of the need, importance and demand for high rise structures, the various loads including active and passive loads and	PO2, PO4, PO5 & PO8



					the major materials and techniques used in construction. Understanding of the various structural systems used for constructing high rise, their need and nature as per design and built with examples.	
				CO4	Learned about long span structures and their primary details along with spans, usages, and construction techniques.	PO2, PO4, PO5 & PO8
5	II	ST-04	Research Methods in Constructions (KAS)	CO1	Researched and developed progress and sustainability and to know its benefits in practices	PO7 & PO8
				CO2	Understanding of types and theories of research methodology.	PO2
				CO3	Learned about relevant data collection and techniques to analyze by using different software.	PO2 & PO5
				CO4	Displayed of presenting and reporting techniques for research methodology by using software.	PO2 & PO5
				CO5	Acknowledged research gaps in construction industry to formulate research problems.	PO6, PO7 & PO8
6	II	EL-03	Elective – 01(Building Management Systems) (UM)	CO1	Learned the various building services in a high-rise project	PO2, PO3 & PO5
				CO2	Understanding of the basics of Building Management Systems and its application	PO2, PO3 & PO5
				CO3	Understanding of integrating building services through BMS	PO2, PO3 & PO5
7	II	EL-04	Elective – 02(Primavera) (UM)	CO1	Understanding of work breakdown structure and organization structure.	PO2, PO3 & PO5

				CO2	Understanding of activity and resource planning and scheduling.	PO2, PO3 & PO5
				CO3	Understanding concept of controlling and monitoring.	PO2, PO3 & PO5
	<b>M. Arch SEM III</b>					
1	III	TH-07	Project Appraisal and Finance Management (KAS)	CO1	Formulated project feasibility report with its analyses.	PO2
				CO2	Knowledge of project cash flow, project estimating techniques and provisions to prepare annual projected report.	PO2 & PO5
				CO3	Learned project appraisal types and techniques to identify and resolve assessed risk in the project.	PO2, PO6 & PO7
				CO4	Learned policies in project capital management to control cash and credit of the project.	PO7
				CO5	Learned relevant laws and their practical application by learning different case studies.	PO7 & PO8
2	III	TH-08	Construction Marketing Management (DG)	CO1	Understanding of marketing management, learning the basics of marketing and the marketing environment.	PO1, PO4, PO6, PO7 & PO8
				CO2	Understanding of real estate marketing, consumers, bidding, demand and supply and societal role in marketing.	PO4, PO6, PO7 & PO8
				CO3	Learned different tools for market study and analysis, consumer behavior, customer relationship and different marketing products involved in Construction/Real estate industry.	PO1, PO2, PO4, PO6, PO7 & PO8
				CO4	Understanding of pricing strategies, financing, distribution, and promotion	PO4, PO6, PO7 & PO8

					strategies involved in marketing.	
3	III	TH-09	Managerial Decision Making (KAS)	CO1	Understanding of importance of Managerial decision making and approach of concepts management problem solving in industrial practices.	PO2 & PO6
				CO2	Learn analytical methods of management of resources and objective of maximizing profit within system.	PO2 & PO3
				CO3	Formulated and resolved problems on linear programming by graphical method and simplex method.	PO2 & PO3
				CO4	Learned network modelling to resolve maximum flow problems and to calculate waiting time of customers in queuing theory.	PO2 & PO3
				CO5	Knowledge of simulation theory and its application by using Monto Carlo method.	PO2, PO3 & PO6
4	III	ST-05	Construction Management Studio (AwS)	CO1	Understanding of fundamentals of management in construction projects- project timelines, phases, progress and different materials and techniques involved focusing on modular systems.	PO2, PO3, PO4, PO5, PO6, PO7 & PO8
				CO2	Enhanced knowledge in the field by studying a live project- Township project with research and analysis focusing on modular systems and its impact on Time, cost, quality of the project by analyzing Project work breakdown structure, organization &	PO2, PO3, PO4, PO5, PO6, PO7 & PO8

					responsibility matrix, Material & Machinery inventory, and allocation of resources with inferences	
5	III	ST-06	Dissertation Stage - I (KAS)	CO1	Identified relevant project management research areas and study its background for further work.	PO2, PO8
				CO2	Collected relevant primary data, conduct surveys, interviews by using different techniques and methods.	PO2, PO4 & PO8
				CO3	Discussed and check hypothesis as per individual research progress.	PO2 & PO3
				CO4	Proceeded with individual research work alternative hypothesis work with approved case studies and surveys conducted.	PO2, PO4 & PO3
				CO5	Prepared presentation and report by using software techniques.	PO5
	<b>M. Arch SEM IV</b>					
1	IV	ST-07	Dissertation Stage - II (KAS)	CO1	Analyzed work done in the research methodology by using different techniques.	PO2, PO3 & PO5
				CO2	Tested research materials, experimenting hypothesis, site work as studied for research project.	PO2, PO3 & PO8
				CO3	Prepared report based on research data, literature reviews, case studies, surveys, and kind of application.	PO5, PO7 & PO8
				CO4	Presented and published research work in different journals and conferences.	PO3, PO5 & PO7
				CO5	Demonstrated research by using reports and analysis through expert's discussions and reviews.	PO5, PO7 & PO8

				CO6	Prepared presentation and report by using software techniques.	PO3, PO5 & PO7
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