



AAYOJAN SCHOOL OF ARCHITECTURE

(Affiliated with Rajasthan Technical University)

PROGRAMME OUTCOMES (POS) AND COURSE OUTCOMES (COS) FOR BACHELOR OF ARCHITECTURE

Program Educational Objectives (PEOs):

[PEO.1]. **Design:** To foster design acumen and develop a sensitized understanding of user and context, pertaining to projects of various scales and complexities.

[PEO.2]. **Technology:** To acquire and assimilate technical knowledge by observing and hands-on practical exercises with building materials and construction techniques for arriving at innovative, efficient and optimised design solutions.

[PEO.3]. **Skills:** To learn and develop graphical, design, technical and life skills for communicating ideas in various mediums.

[PEO.4]. **Humanities:** To comprehend, build empathy and interpret socio-economic, cultural, historic and ecological factors to arrive at inclusive, sustainable solutions, with respect to time, space and place.

[PEO.5]. **Research:** To nurture intent of inquiry to undertake informed decisions both at individual and team level to tackle current and future challenges to the profession, education and society at large.

Program Outcomes (POs):

At the end of the program, students would be able to

[PO.1]. **Architectural Knowledge:** Apply the knowledge of Humanities, Design, Technology and Research to the solution of complex problems.

[PO.2]. **Problem Analysis:** Identify problem(s), formulate framework for analysis, identify material and methods for research and analyse complex problems.

[PO.3]. **Creativity & Innovation:** Explore, evaluate and innovate design solutions using / combining indigenous knowledge systems with modern technology and global best practices.

[PO.4]. **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources and IT tools including prediction and modelling to complex architectural activities with an understanding of the limitations.

[PO.5]. **The Architect, Society & Environment:** Assess and consciously interpret socio-cultural, environmental, health, safety and legal parameters to propose sustainable solutions relevant to the architectural professional practice

[PO.6]. **Human Values and Professional Ethics:** Commit to professional ethics, responsibilities and norms of the architectural practice in accordance with human values such as equity, justice, integrity, inclusivity, etc.

[PO.7]. **Leadership and Teamwork:** Function effectively as a professional in individual capacity, as well as a member or leader in diverse teams, and in a multidisciplinary setting.

[PO.8]. **Communication:** Communicate design narrative effectively to each stakeholder via reports, design documents and presentations.

[PO.9]. **Project Management and Finance:** Effectively implement finance and management skills in handling projects with multidisciplinary aspects.

[PO.10]. **Life-Long Learning:** continue self development by learning, observing, analysing, implementing, communicating and enabling overall personality enhancement.

Program Specific Outcomes (PSOs):

[PSO.1]. **Design:** Address Context, Site, Climate & Built Form, Material & Construction, Structure, Building Services & Sciences, Anthropometry & Ergonomics, in design projects of various scales and complexities.

[PSO.2]. **Technology:** Apply the knowledge acquired by observing and working hands-on with building materials and construction techniques for innovative, optimised design and technological solutions.

[PSO.3]. **Skills:** Apply appropriate graphical, design and technical skills along with effective communication and life skills for efficient architectural practice.

[PSO.4]. **Humanities:** Apply socio-economic, cultural, historic and ecological aspects to arrive at inclusive solutions.

[PSO.5]. **Research:** Undertake quantitative and qualitative research both at individual and team level for the benefit of the architectural profession and society at large.

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR1	Mathematics	30	2L	2	100

Course Objectives:

- To gain knowledge and understand the fundamentals of mathematics.
- To explore concepts and develop problem-solving skills and basics of statistics.
- To solve various problems on differential equations and concepts of a derivative and standard rule of differentiation, definite and indefinite integral, and standard rules of integration.

Course Outcomes:

Students shall be able to:

CO1: Acquire knowledge on Statistics.

CO2: Acquire knowledge on the Differential Equations

CO3: Acquire knowledge on the Matrices

CO4: Acquire knowledge on the Linear Programming

CO5: Acquire knowledge on the Integral Calculus

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	1	0	0	1	1	0	1	0	2
CO2	1	1	0	0	1	1	0	1	0	2
CO3	1	1	0	0	1	1	0	1	0	2
CO4	2	1	0	0	1	1	0	1	0	2
CO5	1	1	0	0	1	1	0	1	0	2
AVG.	1.4	1	0	0	1	1	0	1	0	2

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR2	Ecology & Built Environment	30	2L	2	100

Course Objectives:

- To sensitize students towards the natural and built environment and their interdependence.
- To understand and explore design so as to minimize the harmful impact on the environment. .

Course Outcomes:

Students shall be able to:

CO1: Comprehend basics of the environment, resources, habitats and ecological footprint of the city.

CO2: Acquire fundamental comprehension of impact of human activities on environment.

CO3: Understand concepts of energy efficient and eco-friendly built environment.

CO4: Basic comprehension of environmental legislations in India

CO5: Learn fundamentals of environmental impact assessment process.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	0	0	3	2	0	0	0	3
CO2	3	2	0	0	3	2	0	0	0	3
CO3	3	2	1	0	3	2	2	2	1	3
CO4	3	1	0	0	3	2	0	0	0	3
CO5	3	1	0	0	3	2	0	2	1	3
AVG.	3	1.4	0.2	0	3	2	0.4	0.8	0.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR3	Architecture Structures-I	30	2L	2	100

Course Objectives:

- To build up the fundamental understanding of behavior of forces
- To identify types of loads on a structure
- To find the center of gravity of different types of structural members and sections.

Course Outcomes:

Students shall be able to:

CO1: Comprehend and apply the concepts of types of forces.

CO2: Identify center of gravity, stress and strain on simple structural elements such as arches, post and lintels, slabs, domes etc.

CO3: Understand the applications and laws associated with lifting machines.

CO4: Get acquainted with the behavior of materials in building elements when subjected to certain external forces such as stresses and strain.

CO5: Analyze types of different loads which if not adequately addressed lead to deformation or destruction of buildings.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	0	0	1	1	0	2	0	3
CO2	3	1	0	0	1	1	0	2	0	3
CO3	3	1	0	0	1	1	0	2	0	3
CO4	3	1	0	0	1	1	0	2	0	3
CO5	3	1	0	0	1	1	0	2	0	3
AVG.	3	1	0	0	1	1	0	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR4	Architectural Graphics	75	1L, 4S	6	200

Course Objectives:

- To introduce, develop and make students proficient in the graphical and visual language
- To represent architecture through various tools and formal drawing techniques.

Course Outcomes:

Students shall be able to:

CO1: Identify appropriate tools and techniques required for scaled drawing representations.

CO2: Learn the necessary skill-set required to represent actual and visualised objects through plan, section, elevations and details

CO3: Acquire understanding of metric and complex projections for better visualisation of independent and interpenetrated objects.

CO4: Communicate architecture in two and three dimensional graphics and the effects due to change in station point in perspective views.

CO5: Comprehend and apply the principles of sciography in drawings via different techniques in order to emphasize scale, depth, shade and context.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	0	3	0	1	0	0	3	0	3
CO2	3	2	3	1	0	2	0	3	0	3
CO3	3	2	3	1	0	2	0	3	0	3
CO4	3	3	3	1	1	2	0	3	0	3
CO5	3	3	3	1	1	2	0	3	0	3
AVG.	3	2	3	0.8	0.6	1.6	0	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR5	Building Materials & Construction I	75	2L, 3S	6	150

Course Objectives:

- To acquaint students with the basic building materials such as stone, brick, earth and their derivatives.
- To develop skills and understanding of the basic building elements
- To learn about interdependence with construction materials that form a complete building envelope.

Course Outcomes:

Students shall be able to:

CO1: Acquire comprehensive knowledge of the basic building materials such as stone, brick, soil, clay which are used in building construction

CO2: Apply material and construction details for the different building elements such as foundation, wall, roof/floor and openings.

CO3: Identify the different protective finishes and their application

CO4: Draft various innovative construction details for a particular construction typology

CO5: Comprehend construction details, sequence of construction and implementation on site

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	0	1	1	1	2	1	3
CO2	3	2	1	0	2	1	1	2	1	3
CO3	3	3	2	0	2	1	1	2	1	3
CO4	3	3	3	0	2	1	2	2	1	3
CO5	3	1	2	0	1	2	2	2	2	3
AVG.	3	2	1.8	0	1.6	1.2	1.4	2	1.2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR6	Art & Basic Design-I	75	1L, 4S	6	150

Course Objectives:

- To introduce and develop a skill set for Arts and Basic Design and make students proficient in the visual language
- To comprehend fundamentals of art, architecture and design.
- To interpret and appreciate classical as well as art in everyday life

Course Outcomes:

Students shall be able to:

CO1: Learn and develop comprehension of elements of design and visual arts through historic and contemporary examples.

CO2: Understanding and applying principles of Art & Basic Design and demonstrating the same.

CO3: Acquire and enhance compositional and observational skills for better visual appreciation.

CO4: Analyze and represent objects from day to day life, by understanding scale, proportion and proximity.

CO5: Communicate ideas related to object creation, composition and representation, both orally and graphically.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	0	1	0	1	3	0	3
CO2	3	2	2	0	1	0	2	3	0	3
CO3	3	3	2	0	2	1	2	3	0	3
CO4	3	3	3	1	2	1	3	3	0	3
CO5	3	3	3	1	2	1	3	3	0	3
AVG.	3	2.6	2.2	0.4	1.6	0.6	2.2	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR7	Computer Application I	30	2S	2	50

Course Objectives:

- To introduce softwares and their appropriate use in the field of architecture for 2D and 3D drawing techniques, and develop integrated language of architectural graphics and digital skills.
- To train in sketch up for developing 3D models
- To train in AutoCAD basic for 2d drafting
- To equip them for producing and editing graphical design presentations

Course Outcomes:

Students shall be able to:

CO1: Acquire required knowledge of software while applying basic modeling tools to express architectural drawings and also modify the drawings corresponding to design development.

CO2: Generate built form (3D/ models) from 2D drawing using digital tools.

CO3: Render drawings and models for realistic visualization.

CO4: Prepare presentation drawings using text, visuals using softwares

CO5: Print and publish drawings using softwares

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	3	1	1	1	3	0	3
CO2	3	2	3	3	1	1	1	3	0	3
CO3	3	2	3	3	1	1	1	3	0	3
CO4	3	2	3	3	1	1	1	3	1	3
CO5	3	1	2	2	1	1	1	3	1	3
AVG.	3	1.6	2.6	2.8	1	1	1	3	0.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
1AR8	Workshop	45	3S	4	100

Course Objectives:

- To develop basic and advanced level skill set for model-making through various techniques using wood, metal, paper or any other material respective to design creation.
- To study joinery in carpentry, basics of photography and application of fabrication in architecture.

Course Outcomes:

Students shall be able to:

CO1: Interpret their thoughts and ideas in physical form by constructing 3d models using different materials

CO2: Comprehend various soft and hard material properties, techniques and their usage in complex model making.

CO3: Learn and apply photography skills to select and compose subjects and surroundings, as well as express and document the entire design process.

CO4: Gain the required knowledge about the application of various tools and equipment for working with metal and wood.

CO5: Analyze various parameters i.e. principles of composition and design, structure, light, and aesthetics through model making in Clay, P.O.P, Mud, ACC, and so on.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	2	0	2	2	3	0	3
CO2	3	2	3	3	1	1	2	3	0	3
CO3	3	2	3	3	2	2	2	3	0	3
CO4	3	2	3	3	2	1	3	3	0	3
CO5	3	3	3	3	2	1	3	3	0	3
AVG.	3	2	2.8	2.8	1.4	1.4	2.4	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR1	Surveying & Leveling	30	2L	2	100

Course Objectives:

- To understand the principles, concepts, and methods of surveying and levelling
- To learn classification, types of surveys and their applications for site analysis and contour map preparation.

Course Outcomes:

Students shall be able to:

CO1: Learn theoretical and practical knowledge of surveying to prepare a base map or a survey map

CO2: Understand and apply Horizontal survey methods such as Chain survey, Compass Survey and Plain Table Survey.

CO3: Understand and apply Vertical survey methods such as Levelling, and Theodolite Survey.

CO4: Measure levels or elevations, marking contours and sloping gradient and measure its area and volume to analyze contour drawings in terms of topography and watershed

CO5: Prepare setting out work for architectural projects, such as for foundation trenches.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	0	0	3	1	3	3	0	3
CO2	3	3	0	0	3	1	3	3	0	3
CO3	3	3	0	0	3	1	3	3	0	3
CO4	3	3	0	0	3	1	3	3	0	3
CO5	3	3	0	0	3	1	3	3	0	3
AVG.	3	3	0	0	3	1	3	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR2	Climatology	30	2L	2	100

Course Objectives:

- To equip students with understanding of climate, its types, elements and their characteristics.
- To acquaint with fundamentals of building physics, tools and techniques
- To study impact of climate on built entities
- To design techniques that reduce the impact and create favorable conditions for human comfort.

Course Outcomes:

Students shall be able to:

CO1: Acquire an understanding of climatic zones', its characteristics, with respect to elements and their impact on architectural design.

CO2: Comprehend the key factors that influence thermal comfort, including, environmental, personal, physiological and psychological factors.

CO3: Analyze relationship between building elements and components and their material characteristics with regards to building performance in a certain climatic zone.

CO4: Familiarize themselves with a range of instruments and tools (analog and digital) in order to undertake analysis of different passive systems in all climatic zones.

CO5: Deliver appropriate climate responsive design solutions for different geographical contexts.

Attainment of Program outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	0	0	0	2	0	0	1	0	3
CO2	3	3	1	2	3	0	0	1	1	3
CO3	3	3	2	2	2	0	3	0	0	3
CO4	3	3	1	3	2	0	2	0	0	3
CO5	3	3	3	3	2	0	1	1	1	3
AVG.	3	2.4	1.4	2	2.2	0	1.2	0.6	0.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR3	Architecture Structures-II	30	2L	2	100

Course Objectives:

- To develop the comprehension for various types of stresses
- To learn bending moments in different types of beams
- To identify load distribution in truss systems.

Course Outcomes:

Students shall be able to:

CO1: Assimilate concepts such as load distribution, shear forces, bending moments.

CO2: Identify the effect of bending stresses in beams.

CO3: Analyze the determination of forces in frames and trusses and their behavior under loading conditions

CO4: Identify impact of shear force on beams

CO5: Analyze the torsional effects on various structural elements.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	0	1	1	0	2	0	3
CO2	3	1	1	0	1	1	0	2	0	3
CO3	3	2	1	0	1	1	0	2	0	3
CO4	3	2	1	0	1	1	0	2	0	3
CO5	3	2	1	0	1	1	0	2	0	3
AVG.	3	1.6	1	0	1	1	0	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR4	Architectural Design I	75	5S	6	200

Course Objectives:

- To understand the interdependence of activity with spaces as a resultant of anthropometry.
- To assimilate learning through articulation of spaces with the interdependence of form, structure and function.
- To draw out design determinants by understanding the concept of space, circulation and form composition.

Course Outcomes:

Students shall be able to:

CO1: Learn and apply the anthropometry principles in space design for various day to day activities.

CO2: Map and draw activities that correspond to inclusive space designing.

CO3: Make efficient layouts as a resultant of anthropometric studies and standards.

CO4: Ideate functional spaces as an outcome of circulation and space.

CO5: Communicate through Design Narrative and Concept Note aided with on-scale drawings, sketches, and models.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	0	2	1	1	3	0	3
CO2	3	2	2	0	2	1	1	3	0	3
CO3	3	3	2	0	2	2	1	3	1	3
CO4	3	3	3	0	2	2	1	3	1	3
CO5	3	2	3	1	2	2	1	3	1	3
AVG.	3	2.2	2.4	0.2	2	1.6	1	3	0.6	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR5	Building Materials & Construction II	75	2L, 3S	6	150

Course Objectives:

- To develop understanding of building materials like lime, cement, sand, industrial timber, their finishes
- To develop an understanding of various joinery systems of wood
- To understand timber construction in all structural and non-structural members of a building.

Course Outcomes:

Students shall be able to:

CO1: Comprehend, and apply lime and its types in various building components and elements.

CO2: Understand, and apply cement and its varieties in various building elements and components.

CO3: Learn about timber, industrial timber and their market variants, joinery systems and construction techniques.

CO4: Acquaint themselves with the construction details in timber for walls, columns, sloped timber roofs, wooden roof truss, doors, windows, flooring etc.

CO5: Comprehend protective finishes, machines and equipment for lime, cement, timber and timber products.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	0	2	2	1	3	1	3
CO2	3	2	1	0	2	2	1	3	1	3
CO3	3	2	1	0	2	2	1	3	1	3
CO4	3	2	1	0	2	2	1	3	1	3
CO5	3	1	2	1	2	2	1	3	2	3
AVG.	3	1.6	1.2	0.2	2	2	1	3	1.2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR6	Art & Basic Design-I	75	1L, 4S	6	150

Course Objectives:

- To enhance the skills for three dimensional compositions
- To apply explorations while gaining a volumetric understanding of a design form.

Course Outcomes:

Students shall be able to:

CO1: Apply principles of transformation and articulation to 3D compositions by understanding visual

and emotional effects of geometric forms.

CO2: Comprehend the meaning of space, role of elements and effects of organization in perception of space.

CO3: Understand the basic human functions, related anthropometry and ergonomics, their impact on

space design and implications for achieving optimum comfort in the same.

CO4: Learn and explore theories of scale and proportion as well as its impact on form, space and structure.

CO5: Interpret ideas and concepts through exploration and abstraction of geometric forms and principles

of design using different materials in all types of spaces.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	1	1	1	2	3	0	3
CO2	3	2	3	1	2	1	2	3	0	3
CO3	3	2	3	1	2	2	2	3	0	3
CO4	3	3	3	1	2	2	2	3	0	3
CO5	3	3	3	3	3	3	2	3	1	3
AVG.	3	2.4	3	1.4	2	1.8	2	3	0.2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR7	Computer Application II	30	2S	2	50

Course Objectives:

- To introduce softwares and their appropriate use in the field of architecture for 2D and 3D drawing techniques, and develop integrated language of architectural graphics and digital skills.
- To train in Advanced AutoCAD 2d drafting tools
- To equip them for producing and editing graphical design presentations by creating layouts
- To introduce BIM software and its usage in Architecture

Course Outcomes:

Students shall be able to:

CO1: Creation of professional designs and drawings in AutoCad.

CO2: Creating and modeling blocks and editing attributes based on design using AutoCad

CO3: Visualize and communicate design via advance techniques using AutoCad

CO4: Prepare presentation drawings using Computer Aided Design.

CO5: Create, Model, Print and publish drawings using BIM software for simple building forms.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	3	2	2	2	3	1	3
CO2	3	2	3	3	2	2	2	3	1	3
CO3	3	3	3	3	2	2	2	3	2	3
CO4	3	3	3	3	2	2	2	3	3	3
CO5	3	3	3	3	2	2	2	3	3	3
AVG.	3	2.6	3	3	2	2	2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
2AR8	Surveying Lab	45	3S	2	100

Course Objectives:

- To familiarize students with surveying instruments and techniques to measure, record and map existing site topography and feature
- To learn related aspects such as maintaining a field book, correcting errors and setting out foundation trenches.
- To identify different types of survey techniques based on the nature of site and survey application are also taught to the students.

Course Outcomes:

Students shall be able to:

CO1: Prepare a survey map of any site by using chain surveying's tools and techniques.

CO2: Make a survey map of a site by using techniques related to Compass to calculate area, and angles.

CO3: Analyze contours and identify the slope and drainage pattern of a site by using Plain Table survey

and other methods and tools of Levelling such as Dumpy Level, Tilting Level, etc.

CO4: Prepare a survey map of any site by using Theodolite and methods of Repetition and Reiteration.

CO5: Prepare a map for both land and existing built mass using data recorded via various instruments and methods such as Trigonometric Levelling.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	0	1	3	3	3	3	1	3
CO2	3	3	0	1	3	3	3	3	1	3
CO3	3	3	0	1	3	3	3	3	1	3
CO4	3	3	0	1	3	3	3	3	1	3
CO5	3	3	0	1	3	3	3	3	1	3
AVG.	3	3	0	1	3	3	3	3	1	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR1	Humanities	30	2L	2	100

Course Objectives:

- To comprehend the sociological, economic, and cultural patterns of human behaviour and cultivate critical and analytical thinking.
- To foster in students a sense of social accountability, ethical awareness, and sensibility, and to improve their knowledge of the people, economics, and the best ways to use resources locally, regionally, and internationally.

Course Outcomes:

Students shall be able to:

CO1: Establish relationship between architecture and sociology via acquiring knowledge on various concepts and theories.

CO2: Understand the role of Social Stratification in rural and urban settlements with the aid of various theories.

CO3: Analyze the contributing factors for the Urbanisation, Overcrowding, Slums, Housing issues, and Rural and Urban social development schemes.

CO4: Evaluate the General Economic Concepts, elementary idea of Economic Planning and agencies/ institutions/ organizations involved in the same.

CO5: Comprehend the land and regional development economics, along with sources of finance and income expenditure patterns.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	0	0	3	3	0	1	0	3
CO2	3	2	0	0	3	3	1	2	1	3
CO3	3	3	1	0	3	3	2	2	2	3
CO4	3	3	0	0	3	3	0	1	3	3
CO5	3	3	2	0	3	3	1	2	3	3
AVG.	3	2.6	0.6	0	3	3	0.8	1.6	1.8	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR2	History of Architecture I	30	2L	2	100

Course Objectives:

- To familiarize students with the parameters responsible for evolution of human civilization and human settlements with a view to have a better understanding of the history of architecture at later stages.
- To inform students about the evolution of the early settlements in Indian subcontinent from ancient to medieval period inclusive of environmental, socio-political, socio-cultural and religious and architectural forces.

Course Outcomes:

Students shall be able to:

CO1: Comprehend and analyse the ancient Indus Valley, Vedic and Buddhist architecture based on the social, cultural, historical and geographical parameters.

CO2: Interpret and compare between various temple typologies of Nagara and Jain styles.

CO3: Categorize and devise Dravidian Style of Architecture.

CO4: Infer and review the pre-mughal islamic architecture, its evolution of architectural styles including Sultanate period to Provincial styles in the Indian subcontinent.

CO5: Assess the pre-mughal and Mughal period and appraise/ critique the historic structures with present context.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	1	3	2	1	2	0	3
CO2	3	1	2	1	3	2	1	2	0	3
CO3	3	1	2	1	3	2	1	2	0	3
CO4	3	1	2	1	3	2	1	2	0	3
CO5	3	1	2	1	3	2	1	2	0	3
AVG.	3	1	2	1	3	2	1	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR3	Architecture Structures-III	30	2L	2	100

Course Objectives:

- To develop an understanding of deflection of beams.
- To identify various advanced structural systems such as shells, folded plate, arches, dome, etc.
- To understand critical stress in compression and analyze the continuous beams.

Course Outcomes:

Students shall be able to:

CO1: Comprehend the reasons and impact of slope and deflection in beams

CO2: Identify deformation of compressive members

CO3: Analyze types of advanced structures such as folded plates, domes, shells etc.

CO4: Undertake analysis of continuous beams

CO5: Acquire a basic understanding of structural elements in Reinforced Cement Concrete (R.C.C.)

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	0	1	1	0	2	0	3
CO2	3	2	1	0	1	1	0	2	0	3
CO3	3	3	1	0	1	1	0	2	0	3
CO4	3	3	1	0	1	1	0	2	0	3
CO5	3	3	1	0	1	1	0	2	0	3
AVG.	3	2.6	1	0	1	1	0	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR4	Architectural Design II	135	9S	10	250

Course Objectives:

- To understand the design of built spaces as a resultant of climatic influences of a place.
- To analyze a site, its impact on site-planning and design evolution as per the characteristics of the climate.

Course Outcomes:

Students shall be able to:

CO1: Learn the impact of climate and its derivatives on built form in a geo-climatic zone.

CO2: Develop the ability to translate principles of design and carry out simple functions and program in urban/rural settings for any climatic zone.

CO3: Evolve spatial organizations of various activities at a building level.

CO4: Design climate responsive buildings through simple techniques such as building orientation, selection of building materials, natural lighting and heating/ cooling systems etc. that offer thermal comfort to the users in both interior and exterior spaces.

CO5: Communicate design through Design Narrative, Concept Note, on-scale drawings and models.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	3	2	1	2	0	3
CO2	3	2	2	1	3	2	1	3	0	3
CO3	3	3	3	1	3	2	1	3	0	3
CO4	3	3	3	1	3	2	1	3	1	3
CO5	3	3	3	2	3	2	1	3	1	3
AVG.	3	2.8	2.6	1.4	3	2	1	2.8	0.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR5	Building Materials & Construction III	75	2L, 3S	6	200

Course Objectives:

- To understand the fundamentals of cement concrete and its allied materials like reinforced cement concrete, high strength, light weight, fly-ash cement concrete and its application in buildings.
- To focus on getting students conversant with the properties, advantages, strengths of concrete which make it the most extensively used construction material.
- To offer extensive information to the students about different materials such as plastic, polymer, asbestos, asphalt, bitumen & tar and their applications in various building components.

Course Outcomes:

Students shall be able to:

CO1: Gain a comparative knowledge of Cement Concrete (CC), Reinforced Cement Concrete (RCC) and Special Structural Concrete (SSC) and their material properties and possible uses in building construction.

CO2: Provide constructional details as per BIS in RCC & SSC in various building elements such as footings, walls, columns and beams, slabs, arches; lintels, door window frames and staircase.

CO3: Comprehend the usage of plastics and polymers in building construction especially in flooring, roofing and openings.

CO4: Apply Asbestos, Asphalt, Bitumen and Tar in building construction

CO5: Comprehend protective finishes, machines and equipment for CC, RCC, Plastic, Asbestos, Asphalt, Bitumen and tar along with sequence of construction and implementation on site

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	2	2	1	3	2	3
CO2	3	2	2	1	2	2	1	3	2	3
CO3	3	2	2	1	2	2	1	3	2	3
CO4	3	2	1	1	2	2	1	3	2	3
CO5	3	2	2	1	2	2	1	3	2	3
AVG.	3	2	1.8	1	2	2	1	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR6	Computer Application III	30	2S	2	100

Course Objectives:

- To train in the use of Advance BIM techniques for architectural design modeling and scheduling
- To equip them for producing and editing graphical design presentations in various advanced formats

Course Outcomes:

Students shall be able to:

CO1: Creation of professional designs and drawings and compare mainstream drafting tools with BIM

CO2: Model and generate building elements and characterize them via rendering techniques

CO3: Creation of complex building forms using Massing and Site tools.

CO4: Create Door, window and Wall schedule for documentation purposes, format and calculate totals and extract the information to external utilities like MS Excel.

CO5: Document design projects including virtual building model using advanced modeling softwares

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	2	2	2	3	2	3
CO2	3	3	3	3	2	2	2	3	2	3
CO3	3	3	3	3	2	2	2	3	2	3
CO4	3	3	3	3	2	2	2	3	3	3
CO5	3	3	3	3	2	2	2	3	3	3
AVG.	3	3	3	3	2	2	2	3	2.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
3AR7	Structure Lab	30	3S	2	100

Course Objectives:

- To study the properties of engineering materials such as cement, aggregates, and concrete.
- To acquaint with standard principles and procedures of testing these materials
- To design concrete mixes; conduct field tests
- To evaluate their applications.

Course Outcomes:

Students shall be able to:

CO1: Comprehend the behavior of the construction materials through various tests and experiments.

CO2: Analyze performance of cement through various tests for evaluating setting time, consistency and soundness.

CO3: Learn the usage of equipment and apparatuses required to conduct tests on various aggregates.

CO4: Visualize the deformation and crack pattern in specimens under different types of loads for assessing compressive strength of concrete.

CO5: Assess and infer from the performed experiments such as Slump test, Compaction factor test, for workability of concrete.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	0	2	2	3	2	0	3
CO2	3	2	2	0	2	2	3	2	0	3
CO3	3	2	2	0	2	2	3	2	0	3
CO4	3	2	2	0	2	2	3	2	0	3
CO5	3	2	2	0	2	2	3	2	0	3
AVG.	3	2	2	0	2	2	3	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR1	Specification & Estimation	30	2L	2	100

Course Objectives:

- To make students understand the factors affecting cost of construction and methods of preparing estimates for architectural projects.
- To present a clear idea about methods of estimation, calculation of quantities for various components while keeping a check on the rate analysis for any particular work in a building project.

Course Outcomes:

Students shall be able to:

CO1: Obtain a basic understanding of Specifications, its types and their preparation.

CO2: Acquire knowledge on Estimation, its types, calculations and methods for building estimates.

CO3: Learn about the Rate Analysis: Analysis of rates for main items of work in buildings, considering current market rates for building materials, labor wages, plants and tools, transportation, handling, storage and contractor's profit.

CO4: Acquire knowledge on the Detailed Estimation and its preparation.

CO5: Compute the Cost, Valuation, factors controlling the cost of Urban real properties, Depreciation, Rent and its implications.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	1	3	3	1	3	3	3
CO2	3	2	1	1	3	3	1	3	3	3
CO3	3	2	1	1	3	3	1	3	3	3
CO4	3	2	1	1	3	3	1	3	3	3
CO5	3	2	1	2	3	3	2	3	3	3
AVG.	3	2	1	1.2	3	3	1.2	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR2	History of Architecture II	30	2L	2	100

Course Objectives:

- To learn and understand the evolution of ancient architectural styles of the West Asiatic, Greek and Roman civilizations and subsequent changes due to the influence of Christianity that is Early Christian, Byzantine, Romanesque and Gothic.
- To understand the role of material availability, construction techniques, socio-economic and religious factors in the development of the various architectural languages.

Course Outcomes:

Students shall be able to:

CO1: Appreciate the unique architectural style developed during the Egyptian Period and identify the development of different styles of architecture in West Asia and its impact across the world.

CO2: Infer learnings from Greek architecture like optical corrections, illusion, scale and proportion

CO3: Comprehend Roman construction of arches, domes, vaults and aqueducts.

CO4: Differentiate between Christian and Romanesque architecture and their influence on the built form.

CO5: Differentiate change in architectural character during Gothic era due to technological advancement besides relating them with design and theory.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	3	1	3	2	1	2	0	3
CO2	3	1	3	1	3	2	1	2	0	3
CO3	3	1	3	1	3	2	1	2	0	3
CO4	3	1	3	1	3	2	1	2	0	3
CO5	3	1	3	1	3	2	1	2	0	3
AVG.	3	1	3	1	3	2	1	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR3	Architecture Structures-IV	30	2L	2	100

Course Objectives:

- To understand basic knowledge of classification and engineering properties of soil and its suitability as a foundation material.
- To develop an understanding of the relationship between physical characteristics and mechanical properties of soil.
- To comprehend the suitable type of footing for a structure.

Course Outcomes:

Students shall be able to:

CO1: Apply the fundamental principles of soil mechanics.

CO2: Classify the soil based on engineering properties of it.

CO3: Understand the stability of the retaining structures.

CO4: Acquire knowledge for foundation stability and displacement.

CO5: Select the required foundation type based on soil bearing capacity and loading on deep foundations.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	0	2	2	0	2	0	3
CO2	3	2	1	0	2	2	0	2	0	3
CO3	3	3	1	0	2	2	0	2	0	3
CO4	3	3	1	0	2	2	0	2	0	3
CO5	3	3	1	0	2	2	0	2	0	3
AVG.	3	2.6	1	0	2	2	0	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR4	Architectural Design III	135	9S	10	250

Course Objectives:

- To develop comprehension of traditional and vernacular architecture through organisation of functional activities in relation to user requirements and existing site conditions.
- To incorporate the influence of anthropology, building culture, traditions, customs and applications of construction material and systems adopted in developing a built form.

Course Outcomes:

Students shall be able to:

CO1: Appreciate and value the impact of socio-cultural and physical parameters in organisation of functions and spaces in varied settings.

CO2: Study context and surroundings and usage of appropriate local construction systems for a site area of approximately 250-500 sq m

CO3: Apply material applications to achieve cost effective and climate responsive design solutions thus responding to the surrounding built environment.

CO4: Ideate design scheme which interprets and responds to local settings and vernacular/traditional architecture style.

CO5: Communicate design through Design Narrative, Concept Note, On-scale drawings and Models.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	2	3	3	2	2	0	3
CO2	3	2	2	2	3	3	2	3	0	3
CO3	3	3	3	1	3	3	2	3	1	3
CO4	3	3	3	1	3	3	1	3	1	3
CO5	3	3	3	2	3	3	1	3	1	3
AVG.	3	2.6	2.6	1.6	3	3	1.6	2.8	0.6	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR5	Building Materials & Construction IV	75	2L, 3S	6	200

Course Objectives:

- To develop understanding of the different nature and properties of metals such as steel, aluminum, copper and their alloys along with the study of glass, and protective finishes.
- To provide students with a clear comprehension of their applications in the structural and non-structural members of the building envelope.

Course Outcomes: Students shall be able to:

CO1: Comprehend the various materials such as Iron & Steel, Aluminium, Glass, Brass, Bronze, Zinc, and their alloys, compositions, market forms, and varied uses as structural and non-structural members and associated challenges in the building industry.

CO2: Provide construction details in various building elements such as steel grillage foundation, pad foundation, steel column and beams, trusses, floor and roof, opening in iron and steel, metal staircase

CO3: Provide construction details for aluminium door and window, structural glazing and curtain wall

CO4: Provide construction details for glass floor, wall, partition systems, skylight and staircase

CO5: Comprehend protective finishes, Machines & Equipment for fabrication in ferrous, non-ferrous materials and Glass along with sequence of construction and site implementations.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	1	2	2	2	3	2	3
CO2	3	2	2	2	2	2	2	3	2	3
CO3	3	2	2	2	2	2	2	3	2	3
CO4	3	2	2	2	2	2	2	3	2	3
CO5	3	2	1	1	2	2	2	3	2	3
AVG.	3	2	1.6	1.6	2	2	2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR6	Measured Drawing & Documentation	45	3S	2	100

Course Objectives:

- To develop an ability in students to learn from existing architecture examples.
- To sharpen and hone their skill sets with regards to observation, analytical
- To comprehend the essential tangible and intangible features associated with a building, site or a precinct through detailed measured drawings.

Course Outcomes:

Students shall be able to:

CO1: Comprehend the need and significance of Measured Drawing & Documentation of existing built fabric of historic and architectural value.

CO2: Enhance skill set related to colloquial and contemporary tools and techniques of field measurements, notes and representation.

CO3: Observe, and differentiate historic layers and analyse and record challenges related to community, culture, context, environment and technology.

CO4: Document and draw (on scale) tangible and intangible aspects of the subject using various graphical and descriptive techniques.

CO5: Apply techniques to document, represent and infer observations and publish findings at levels such as space, component, element, building, precinct and settlement.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	3	3	3	3	1	3
CO2	3	3	2	3	3	3	3	3	3	3
CO3	3	3	2	2	3	2	3	3	2	3
CO4	3	3	2	2	3	2	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3	3
AVG.	3	3	2	2.4	3	2.6	3	3	2.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
4AR7	Computer Application IV	30	2S	2	100

Course Objectives:

- To enable students to comprehend basics of digital design expression and presentation.
- To create and represent design projects and evolve them by using specific and advanced digital tools and techniques.

Course Outcomes:

Students shall be able to:

CO1: Apply appropriate presentation softwares and plugins for designs, related drawings and details.

CO2: Comprehend advanced technologies of virtual reality and its integration in architectural design

CO3: Use the architectural rendering software to enhance their design and create more realistic representation of what their final design may look like

CO4: Apply the layers, textures, shadows and lighting effects to generate final digital image(s).

CO5: Use advanced technologies to publish their project portfolios in various digital formats

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	2	2	2	3	2	3
CO2	3	3	3	3	2	2	2	3	2	3
CO3	3	3	3	3	2	2	2	3	2	3
CO4	3	3	3	3	2	2	2	3	3	3
CO5	3	3	3	3	2	2	2	3	3	3
AVG.	3	3	3	3	2	2	2	3	2.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR1	Building Plumbing Services	30	2L	2	100

Course Objectives:

- To prepare students with an understanding of plumbing services i.e. water supply, sanitation, stormwater management and treatment
- To prepare the specialized drawings for buildings.

Course Outcomes:

Students shall be able to:

CO1: Gather the information related to sources of water, demand, treatment and distribution of water

CO2: Study and analyze the internal and external drainage systems of various buildings and cost effective treatment methods.

CO3: Compute and apply appropriate methods with respect to regulations, byelaws and codes applicable to plumbing services.

CO4: Acquire understanding of rainwater harvesting systems within buildings and explore modern renewable energy systems.

CO5: Prepare detailed drawings for water supply, sanitation and waste water management related to services for concurrent architectural design projects.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	0	0	3	2	0	1	1	3
CO2	3	2	1	0	3	2	0	2	2	3
CO3	3	1	0	0	2	2	0	2	0	3
CO4	3	2	0	0	2	2	0	2	2	3
CO5	3	3	0	2	3	2	0	3	2	3
AVG.	3	1.8	0.2	0.4	2.6	2	0	2	1.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR2	History of Architecture III	30	2L	2	100

Course Objectives:

- To learn and understand the evolution of ancient architectural styles developed in Europe after dark ages, i.e. during the Renaissance Period and further to Neoclassical Architecture.
- To understand the role of Industrial revolution, Colonisation and subsequent new age material and construction techniques' development, socio-economic and religious factors in the development of the various architectural languages from the Late 19th century onwards.

Course Outcomes:

Students shall be able to:

CO1: Appreciate the unique architectural style developed during the Renaissance Period and identify the development of different styles of architecture in Baroque Architecture.

CO2: Acquire knowledge on the evolution, significance, principles and characteristics of Neoclassical and Industrial Architecture.

CO3: Analyze the contributing factors for the fundamental transformation of design development of different architectural movements across the world during the 19th century.

CO4: Analyze the contributing factors for the fundamental transformation of design development of different architectural movements across the world during the 20th century.

CO5: Summarize the influence on architecture in India during the colonial period and its fusion with regional architecture.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	1	3	2	1	2	0	3
CO2	3	2	3	1	2	2	1	2	0	3
CO3	3	2	3	1	2	2	1	2	0	3
CO4	3	2	3	1	3	2	1	2	0	3
CO5	3	2	3	1	3	2	1	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR3	Architecture Structures-V	30	2L	2	100

Course Objectives:

- To develop an understanding of the basic principles and behaviour of reinforced concrete elements, components and systems subjected to static loads.
- To deal with specifications and procedures of design and analysis of Reinforced concrete components as per the Indian Standard codes.

Course Outcomes:

Students shall be able to:

CO1: Comprehend properties and design of beams in Reinforced Cement Concrete (R.C.C.).

CO2: Acquire the knowledge of various RCC structural elements such as types of columns etc.

CO3: Compute the load calculation and their effects on RCC slabs

CO4: Calculate and design various types of footing and retaining walls etc for a structure.

CO5: Calculate and design types of retaining wall.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	0	2	2	0	2	0	3
CO2	3	3	1	0	2	2	0	2	0	3
CO3	3	3	1	0	2	2	0	2	0	3
CO4	3	3	1	0	2	2	0	2	0	3
CO5	3	3	1	0	2	2	0	2	0	3
AVG.	3	3	1	0	2	2	0	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR4	Architectural Design IV	135	9S	10	250

Course Objectives:

- To allow students to study and analyse natural and manmade structural systems, working principles, the correlation between function, space, form and application of various structural systems in design.
- To design study gives the opportunity to the students to provide strength, expression and enrich the architectural experience.

Course Outcomes:

Students shall be able to:

CO1: Acquire knowledge related to relationship between various building typologies, structural systems and associated materials and construction systems.

CO2: Implement structure as a tool to initiate the design process, façade modulator, form giver, and so on.

CO3: Apply the correlation between structural grid and spatial activities for different building typologies through model making for a built-up area of approximately 500-1000 sq m.

CO4: Ideate design for a multi-functional project in a neighbourhood context via analogue and digital modelling skills for an integrated structure, material and interior design.

CO5: Communicate design through Design Narrative, Concept Note, On-scale drawings for structure, related details and Models.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	3	2	2	2	1	3
CO2	3	3	3	2	3	3	2	3	1	3
CO3	3	3	3	2	3	3	2	3	1	3
CO4	3	3	3	3	3	3	1	3	1	3
CO5	3	3	3	3	3	3	1	3	1	3
AVG.	3	2.8	2.8	2.2	3	2.8	1.6	2.8	1	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR5	Building Materials & Construction V	75	2L, 3S	6	200

Course Objectives:

- To understand the fundamentals of damp proofing and waterproofing materials and their application.
- To measures for fire and pest control in planning and designing of buildings
- To reduce impact and create favorable conditions for human safety.
- To develop understanding of the concept of heat transfer and thermal properties of materials for making comfortable spaces.
- To study construction of different protective and decorative finishes in buildings for aesthetics and to safeguard from the impact of the environment.

Course Outcomes:

Students shall be able to:

CO1: Comprehend causes, and damages due to dampness; materials, processes and construction details to prevent the same in the buildings.

CO2: Apply appropriate materials, techniques and construction details of waterproofing for different types roofs, water tanks, swimming pools, parapets and coping.

CO3: Comprehend material and construction details for fire and pest resistance in buildings

CO4: Apply innovative construction details for heat insulation of roofs, exposed walls, windows and ventilators.

CO5: Learn about protective and decorative finishes and machines, tools, equipment and processes for paints, varnishes, distemper in various building elements, components and furniture.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	2	2	3	2	3
CO2	3	3	3	2	2	2	2	3	2	3
CO3	3	3	3	2	2	2	2	3	2	3
CO4	3	3	3	2	2	2	2	3	2	3
CO5	3	3	2	2	2	2	2	3	2	3
AVG.	3	3	2.8	2	2	2	2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR6	Interior Design	45	3S	4	100

Course Objectives:

- To impart knowledge about interior space elements and finishes.
- To develop understanding of the material palette available in market, prevailing and innovative trends
- To apply in different interior projects by drawing various theoretical issues, concepts through the study of works done by practitioners.

Course Outcomes:

Students shall be able to:

CO1: Learn and analyse functional criterias for design of various interior elements in any space.

CO2: Comprehend the effect of surface and visual characteristics of interior elements on user's space perception.

CO3: Select or design and apply appropriate furniture and interior accessories based on theme/ style of the project.

CO4: Develop an understanding of integrating interior services with interior design of the project.

CO5: Provide concept, interior design scheme, drawings and details for the given project.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	2	1	3	0
CO2	3	1	3	3	3	3	2	1	3	1
CO3	3	2	3	3	3	3	2	2	3	2
CO4	3	3	3	3	3	3	2	2	3	2
CO5	3	3	3	3	3	3	3	3	3	2
AVG.	3	2.4	3	3	3	3	2.2	1.8	3	1.4

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR7.1	Furniture Design	45	3S	3	100

Course Objectives:

- To develop an understanding and the skills which enables the students to research, formulate, develop furniture
- To resolve design solutions for furniture keeping in mind the user, activity, space, and materials.

Course Outcomes:

Students shall be able to:

CO1: To identify furniture design and its types based on function, state and forms.

CO2: Infer the historical and cultural context of Furniture Design from Industrial revolution to 21st century.

CO3: Analyze the Materials: types of materials, market forms, construction or assembly techniques.

CO4: Prepare drawings and details to manufacture furniture.

CO5: Create prototype furniture for user feedback.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	1	1	3	1	3	2	3
CO2	3	1	2	1	2	3	1	3	0	3
CO3	3	2	3	2	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
AVG.	3	2	2.6	2	2.4	3	2.2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR7.2	Product Design	45	3S	3	100

Course Objectives:

- To introduce the various aspects of product design including the role of a product designer, its types, needs, process-research, production and marketing.
- To learn about its evolution and its role post industrialization and through the world wars and up till the coming of digitization.
- To expose the students to the parallel tools of typefaces, color selection, material selection, prototyping and their application in the making of a complete product.
- To expose students to the allied design fields and how the process remains constant and carries forward as per the requirements such as ergonomics, aesthetics and construction technique.

Course Outcomes:

Students shall be able to:

CO1: Understand what is Product design, types and need, and differentiate between Industrial and Product Design.

CO2: Infer the historical and cultural context of Product Design from Industrial Revolution to 21st century.

CO3: Analyze the Common Materials such as stone, wood, metals and polymers and their applications.

CO4: Prepare drawings and details to manufacture products.

CO5: Create the prototype product for user feedback.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	1	3	3	1	3	1	3
CO2	3	1	2	1	2	3	1	3	1	3
CO3	3	2	3	2	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
AVG.	3	2	2.6	2	2.8	3	2.2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
5AR7.3	Digital Design	45	3S	3	100

Course Objectives:

- To explore digital design for ideating and developing designs.
- To comprehend the inter-relationships of geometric and architectural parameters

Course Outcomes:

Students shall be able to:

CO1: Learn to design digitally using parametric softwares with regards to the evolving architecture

design profession.

CO2: Distinguish the historical evolution of Digital Architecture with respect to computational designs

and contemporary practices.

CO3: Conceptualise design and create shop drawings using Rhino+ Grasshopper.

CO4: Employ Digital fabrication and Scaled Models, 3D printing, laser cutting and fabrication techniques.

CO5: Create Design: Design Portfolio using Adobe Illustrator and In-design.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	2	3	3	1	3	1	3
CO2	3	2	2	2	2	3	1	3	1	3
CO3	3	2	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
AVG.	3	2.4	2.8	2.6	2.8	3	2.2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR1	Building Electrical Services	30	2L	2	100

Course Objectives:

- To learn the fundamentals of electrical services and its importance with respect to the planning and designing of the built environment
- To understand theory as well as application in the form of electrical layout design

Course Outcomes:

Students shall be able to:

CO1: Build knowledge base with regards to sources of energy, consumption behavior and basic concepts of electricity.

CO2: Comprehend the process and components of transmission and distribution from generation to end user and related codes, policies and standards.

CO3: Apply the theoretical and practical applications of wiring and its components, its laying methods and understand the system components ensuring efficiency, quality and safety in electrical services

CO4: Learn about the technical advancement inclusion related to Building Automation systems to ensure efficiency, safety and quality.

CO5: Design the basic electrical layout to be integrated with Architectural Design projects.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	0	0	3	0	0	2	0	3
CO2	3	1	0	0	2	3	0	2	2	3
CO3	3	3	2	0	2	2	0	2	1	3
CO4	3	3	3	3	2	1	0	2	1	3
CO5	3	3	3	3	2	2	2	3	1	3
AVG.	3	2.2	1.6	1.2	2.2	1.6	0.4	2.2	1	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR2	History of Architecture IV	30	2L	2	100

Course Objectives:

- To learn and understand the evolution of ancient architectural styles of the Modern and Postmodern World.
- To understand the role of material availability, construction techniques, socio-economic and religious factors in the development of the various architectural languages.

Course Outcomes:

Students shall be able to:

CO1: Appreciate the unique architectural style developed during the 1st generation of Master Architects

of Modernism and identify the development of different styles of architecture of master architects.

CO2: Acquire knowledge on the evolution, significance, principles and characteristics of Modernism after masters.

CO3: Analyze the contributing factors for the fundamental transformation of design development of modernism to postmodernism, classism and High Tech.

CO4: Appreciate the unique architectural style developed during Deconstructivism and Regionalism and

identify the development of different styles of architecture of master architects.

CO5: Summarize the architecture in India post colonial period and its fusion with regional architecture.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	2	3	2	1	2	0	3
CO2	3	2	3	2	3	2	1	2	0	3
CO3	3	2	3	2	3	2	1	2	0	3
CO4	3	2	3	2	3	2	1	2	0	3

CO5	3	2	3	2	3	2	1	2	0	3
AVG.	3	2	3	2	3	2	1	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR3	Architecture Structures-VI	30	2L	2	100

Course Objectives:

- To develop an understanding of the theory, behavior analysis
- To design steel structural members and systems.
- To prepare students for the effective application of steel tables and other aids in the designing of structural members in the same.

Course Outcomes:

Students shall be able to:

CO1: Analyze the material properties of structural steel members and connections

CO2: Analyze the behaviour and design the tensile steel members.

CO3: Analyze the behaviour and design the compressive steel members.

CO4: Design and analyze the beams in steel structures.

CO5: Detail different types of joints and connections for steel structural members as per the Indian Standard Codes and norms.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	0	2	2	0	2	0	3
CO2	3	3	1	0	2	2	0	2	0	3
CO3	3	3	1	0	2	2	0	2	0	3
CO4	3	3	1	0	2	2	0	2	0	3
CO5	3	3	1	0	2	2	0	2	0	3
AVG.	3	3	1	0	2	2	0	2	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR4	Architectural Design V	135	9S	10	250

Course Objectives:

- To integrate building services as a functional enhancer of spaces keeping in mind parameters such as light and ventilation, water supply, waste management and energy conservation through use of advanced building technologies.
- To highlight the study and application of utilities and services to improve aesthetics and comfort.

Course Outcomes:

Students shall be able to:

CO1: Learn about spatial integration of structural and constructional systems with services mechanisms

CO2: Increase functional efficiency of spaces with regards to building services

CO3: Enhance comfort and aesthetics of the building

CO4: Integrate basic service layout of water supply, waste management, electricity supply, HVAC systems etc. into the design project.

CO5: Communicate design through computer aided design and presentation techniques.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	3	2	2	2	1	3
CO2	3	3	3	2	3	3	2	3	1	3
CO3	3	3	3	2	3	3	2	3	1	3
CO4	3	3	3	3	3	3	1	3	1	3
CO5	3	3	3	3	3	3	1	3	1	3
AVG.	3	2.8	2.8	2.2	3	2.8	1.6	2.8	1	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR5	Building Materials & Construction VI	75	2L, 3S	6	200

Course Objectives:

- To study in detail of Building technology for easier and faster construction of different types of structures; high rise structures, long span structures, precast, prefabricated and prestressed construction.
- To learn detailed knowledge of advanced building material and their application.
- To develop understanding of students on various advanced building materials and technology related to advanced contemporary construction.
- To comprehend techniques used in buildings with precast, prefab and alternate construction technologies.

Course Outcomes: Students shall be able to:

CO1: Comprehend materials, their standardization, modularity and construction details of Precast, Prefabricated and Prestressed construction.

CO2: Learn about material and construction details of long span structures.

CO3: Comprehend materials and construction details for various building elements in high rise structures

with respect to seismic and wind loads.

CO4: Compare appropriate construction technology with regards to usage of waste as building materials.

CO5: Understand advanced materials and construction technologies such as smart, intelligent, re-purposed, transformational, nano etc.in building industry.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	2	2	2	3	2	3
CO2	3	3	2	3	2	2	2	3	2	3
CO3	3	3	2	3	2	2	2	3	2	3
CO4	3	3	2	3	2	2	2	3	2	3
CO5	3	3	2	3	2	2	2	3	2	3
AVG.	3	3	2	3	2	2	2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR6	Landscape Design	3S	45	4	100

Course Objectives:

- To impart knowledge and skill-set about Landscape elements and ecology
- To develop site planning ability as per context
- To select appropriate materials for various landscape elements for design of outdoor spaces in different landscape projects
- To draw various theoretical issues, concepts through the study of works done by practitioners as case studies.

Course Outcomes:

Students shall be able to:

CO1: Learn basic landscape design concepts and process i.e. research, analysis and historic influences.

CO2: Understand the significance, types and apply various elements of landscape design

CO3: Undertake essential site studies and provide solutions to pertinent issues and challenges

CO4: Design a holistic landscape master plan with Grading plan, Planting Plan, Material Plan, Drainage

and Irrigation System Layout plan, Outdoor Lighting layout plan, with specifications.

CO5: Provide and communicate concept, landscape design scheme, drawings and details for the given

project while integrating the seasonality and conscious environmental aspects.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	1	3	2	1	3	0	3
CO2	3	3	2	1	3	2	1	3	0	3
CO3	3	3	3	2	3	2	2	3	0	3
CO4	3	3	3	3	3	2	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3



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AVG.	3	3	2.6	2	3	2.2	1.2	3	1.2	3
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Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR7.1	History of Architecture of Rajasthan	30	3S	3	100

Course Objectives:

- To comprehend background, historical context and chronological development of architecture in the state of Rajasthan.
- To conduct research on indigenous and traditional architecture through archaeological evidence, written texts and other interpreted stories.

Course Outcomes:

Students shall be able to:

CO1: Equip themselves with the knowledge about the factors responsible in shaping the architectural vocabulary of a building, precinct or region and social, political and cultural aspects of built fabric.

CO2: Infer the development and evolution of architecture for early archeological evidence to various historical periods in Rajasthan.

CO3: Indicate the contributing factors for the organic and planned settlement patterns of built forms of cities.

CO4: Comply the history of building crafts such as traditional treatise, visual records, local traditions of artisanship.

CO5: Appraise the various building typologies such from building level to precinct level to urban level.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	0	3	1	1	3	0	3
CO2	3	2	1	0	3	1	1	3	0	3
CO3	3	2	2	0	3	1	1	3	0	3
CO4	3	2	2	0	3	1	1	3	0	3
CO5	3	2	2	0	3	1	2	3	0	3
AVG.	3	2	1.6	0	3	1	1.2	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR7.2	Vernacular architecture of Rajasthan	30	3S	3	100

Course Objectives:

- To study and analyze the physical factors shaping the built environment of a place or a specific region.
- To analyze how climatic concerns and topographical constraints conceptualize a space.

Course Outcomes:

Students shall be able to:

CO1: Infer vernacular architecture, associated terms, types in various climatic areas of India.

CO2: Illustrate Vernacular architecture and its influence by a variety of variables.

CO3: Analyze the contributing factors for regional dwelling patterns, settlements and their proximity to water resources.

CO4: Apply the research on the relative built typologies in the cities of Rajasthan in terms of context, physical qualities, and culture.

CO5: Summarise the characteristic spaces and thematic elements, Architectural expressions and ornamentation; and Embellishments.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	0	3	2	1	3	0	3
CO2	3	1	1	0	3	2	1	3	0	3
CO3	3	2	1	0	3	2	2	3	0	3
CO4	3	2	1	0	3	2	2	3	0	3
CO5	3	2	1	0	3	2	2	3	0	3
AVG.	3	1.6	1	0	3	2	1.6	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
6AR7.3	Arts & Crafts of Rajasthan	30	3S	3	100

Course Objectives:

- To learn various factors, techniques, materials and regional impacts on traditional building crafts of Rajasthan.

Course Outcomes:

Students shall be able to:

CO1: Distinguish traditional divisions of Rajasthan's arts and crafts based on various socio-economic and cultural factors.

CO2: Illustrate Rajasthan's art and craft classification based on the type of work and the materials utilised.

CO3: Analyze the contributing factors for Rajasthani rock formations, stone varieties along with stone craftsmen clusters..

CO4: Apply stone as structural and architectural components, interior and landscape features/ accents sculptures, and artifacts along with their maintenance and upkeep.

CO5: Understand the interpretations, innovations and adaptations of stone crafts while studying works of Raj Rewal, Charles Correa, Ashok B Lall and Nimish Patel.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	0	0	3	2	1	3	0	3
CO2	3	2	1	0	3	2	1	3	0	3
CO3	3	2	1	0	3	2	1	3	0	3
CO4	3	2	2	0	3	2	2	3	1	3
CO5	3	3	2	0	3	2	2	3	2	3
AVG.	3	2	1.2	0	3	2	1.4	3	0.6	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR1	Building Mechanical Services	30	2L	2	100

Course Objectives:

- To relate with the fundamentals of thermodynamics
- To develop basics about human comforts.
- To offers knowledge about fundamentals of heat ventilation and air conditioning
- To understand its system components and application criterion
- To learn about Fire services including fire protection, prevention and life safety.
- To introduce the mechanical system used for variety of building uses

Course Outcomes:

Students shall be able to:

CO1: Understand the basics of thermodynamics, Identify parameters of thermal comfort and requirement for mechanical interventions

CO2: Converse about various HVAC system components, equipments advancements and energy efficient solutions for hybrid mechanical system

CO3: Understand prevention, life safety and protection related to fire, Fire Safety systems as per NBC norms to the built environment

CO4: Converse about mechanically operated horizontal and vertical circulation systems.

CO5: Comprehend learning by application of these services to the concurrent architectural design studio exercises

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	0	1	2	1	0	2	0	3
CO2	3	3	1	0	2	1	0	2	2	3
CO3	3	3	2	0	3	3	0	2	0	3
CO4	3	3	2	0	2	1	0	2	0	3
CO5	3	3	3	2	2	1	2	2	0	3
AVG.	3	3	1.6	0.6	2.2	1.4	0.4	2	0.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR2	Contract Documents And Byelaws	30	2L	2	100

Course Objectives:

- To equip students with understanding of contractual documents and details, tenders and their requirements, commitment and responsibilities of different parties such as architects, contractors, consultants etc. in different stages of a project.
- To be familiarized with different national guidelines, building bye laws; terminologies such as F.A.R./F.S.I., B.A.R., Ground coverage, height etc. to achieve effective & practical design solutions.

Course Outcomes:

Students shall be able to:

CO1: Acquire detailed knowledge about types of building contracts, their documentation and related procedures.

CO2: Comprehend tendering process in architectural professional practice.

CO3: Distinguish and apply the building bye-laws with respect to specific zones and their considerations.

CO4: Learn about the project Approval and Clearance processes, pre and post construction.

CO5: Correlate the allied labour laws, acts and real estate bills with the professional field.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	2	3	3	2	3	3	3
CO2	3	2	1	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	3	3
CO4	3	3	3	3	2	3	2	3	3	3
CO5	3	1	1	1	3	3	2	2	3	3
AVG.	2.4	2.2	1.8	2	2.8	3	2.2	2.8	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR3	Acoustics and Illumination	30	2L	2	100

Course Objectives:

- To equip a student with understanding of the behavior of sound and light
- To understand characteristics, qualitative and quantitative aspects, properties of acoustical materials.
- To deal with the tools and techniques to study the various aspects of sound and light in buildings
- To design techniques that can enhance and create favorable physical comfort for occupants.

Course Outcomes:

Students shall be able to:

CO1: Acquire understanding of behavior of sound in open and enclosed space and various methods to represent the same.

CO2: Use instruments, numerical procedures and other aids to measure and assess sound quality and noise level in different environments.

CO3: Apply knowledge of materials and their physical and thermal properties to design for sound for diverse functions and respective spaces.

CO4: Understand and quantify laws of illumination and lighting requirements to perform any activity in a particular space.

CO5: Design for artificial lighting as an element in architectural schemes for various spaces and buildings.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	0	1	1	0	0	2	0	3
CO2	3	3	1	2	1	0	2	1	0	3
CO3	3	3	2	3	2	1	1	2	1	3
CO4	3	2	1	2	2	0	0	2	2	3
CO5	3	3	2	3	2	1	1	2	1	3
AVG.	3	2.6	1.2	2.2	1.6	0.4	0.8	1.8	0.8	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR4	Architectural Design VI	135	9S	10	250

Course Objectives:

- To develop and enhance site planning ability amongst the students such as locating building blocks on site as per climate, site conditions and various building regulations
- To achieve mutually beneficial relationships between built and open spaces.

Course Outcomes:

Students shall be able to:

CO1: Identify appropriate placing of the built mass and blocks, designing of external circulation, built and open spaces while keeping in mind the physiological features of and at site level.

CO2: Analyze various natural and man-made features and their impact on site, surroundings and environment.

CO3: Design a sustainable built environment at campus level

CO4: Integrate building mechanical services, acoustics and illumination, universal design provisions. in design proposals

CO5: Communicate and justify design through Design Narrative and Concept notes created through appropriate computer aid.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	2	3	2	2	3
CO2	3	3	3	2	3	3	3	3	2	3
CO3	3	3	3	3	3	3	2	3	2	3
CO4	3	3	3	3	3	3	1	3	2	3
CO5	3	3	3	3	3	3	1	3	2	3
AVG.	3	3	3	2.6	3	2.8	2	2.8	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR5	Working Drawing	75	1L, 4S	4	200

Course Objectives:

- To learn and generate set of drawings which provide necessary information
- To the construction team and other related agencies to sequence, schedule and Coordinate respective site works.
- To prepare and read different types of detailed drawings
- To prepare details for architectural, structural, building services (Plumbing, Electrical, Mechanical etc.) Landscape and Furniture design, etc.

Course Outcomes:

Students shall be able to:

CO1: Learn about types of working drawings and components for appropriate selection and representation for different projects and their sequence for its management .

CO2: Undertake preparation of detailed layouts in various layers with specifications for different buildings consistent with the industry standards for project execution.

CO3: Comprehend techniques for representation for working details of various building elements and components along with specifications.

CO4: Understand the representation methods for various services (Plumbing, Electrical, Mechanical etc.) and prepare drawings and details for the same for on-site execution.

CO5: Understand the sequence of activities to be followed on site with respect to protective and decorative finishes.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	2	2	3	3	3	3
AVG.	3	3	3	3	2.4	2.8	3	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR6	Settlement Planning	75	1L, 2S	4	100

Course Objectives:

- To understand historic, socio-cultural, developmental, technical and political processes concerned with the use of land
- To design urban environment, including transportation network
- To guide and ensure the orderly development of settlements and communities with appropriate graphical representation.

Course Outcomes:

Students shall be able to:

CO1: Acquaint themselves with evolution of ancient and modern planning principles and civilizations.

CO2: Learn and analyse settlement forms with regards to socio-cultural, economical, technological and political landscape of an era.

CO3: Comprehend application of planning theories and techniques on development exercises.

CO4: Critically appraise existing schemes, missions and guidelines and their role in developing in selected areas or settlements.

CO5: Understand basics of transportation networks and planning related theories and techniques along with their application.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	3	3	3	3	0	3
CO2	3	2	2	3	3	2	2	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	1	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
AVG.	3	2.8	2.6	2.4	3	2.8	2.8	3	2.2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR7.1	Universal Design	45	3S	3	100

Course Objectives:

- To develop design based sensitivity in students with regards to making the built environment accessible for all.
- To comprehend the principles and components of universal design and explore, develop and revisit design solutions which are inclusive in nature.

Course Outcomes:

Students shall be able to:

CO1: Understand disability, and the need for Universal Design based on its origin, historic and legal development.

CO2: Critically analyse universal design requirements with respect to aspects of anthropometrics i.e. visibility, access and usage.

CO3: Comprehend Universal Design Guidelines and Legal Provision

CO4: Prepare Design and Construction Strategies with respect to all kinds of disability at site and building levels with comprehension of appropriate material usage.

CO5: Incorporate the Universal Design principles and solutions at Urban Level such as for Streets, Pedestrian Crossings, Curb Ramps, Parking, Public Toilets, Parks, Bus Stops and so on, with comprehension of appropriate material usage.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	3	3	2	3	1	3
CO2	3	3	2	1	3	3	2	3	1	3
CO3	3	3	3	2	3	3	2	3	1	3
CO4	3	3	3	3	3	3	2	3	2	3
CO5	3	3	3	3	3	3	2	3	2	3
AVG.	3	2.8	2.6	2	3	3	2	3	1.4	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR7.2	Research Methodology	45	3S	3	100

Course Objectives:

- To learn research, process and its application in Architecture and its allied fields.
- To build the students' knowledge base with the existing and upcoming practices, methods, tools and technical writing skills for research formulation.

Course Outcomes:

Students shall be able to:

CO1: Establish relationships between scientific research characteristics, research levels, research design components, identify research areas, define the problem, formulate hypotheses, and collect data via various sources.

CO2: Acquire knowledge on research types and techniques.

CO3: Categorize the contributing factors for research tools such as interview techniques and visual techniques.

CO4: Analyse the data collected through various research methods using statistical methods.

CO5: Create a research output in the form of literature review, research gap and questions.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	2	2	3	1	2	3	3
CO2	3	3	1	2	2	3	1	2	3	3
CO3	3	2	2	3	2	3	2	3	3	3
CO4	3	3	2	3	3	3	2	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
AVG.	3	2.8	1.8	2.6	2.4	3	1.8	2.6	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
7AR7.3	Architectural Journalism	45	3S	3	100

Course Objectives:

- To foster writing and critical thinking abilities in relation to art, design, and architecture while taking into account the intricate web of social, political, environmental, and technical factors.
- To study a liberal arts-focused course that offers a perfect framework for those with an ability for writing to develop their interest in promoting awareness of architecture throughout society

Course Outcomes:

Students shall be able to:

CO1: Infer the role of Architectural Journalism in promoting architectural design theory and developing critical thinking.

CO2: Synthesize the emergence and evolution of architectural journalism in both the global and Indian contexts.

CO3: Discover the architectural journalism resources and the involved verification processes before publishing.

CO4: Apply skills related to project documentation, essay and critical writing with regard to architecture.

CO5: Access, organize, integrate, and produce information using technologies related to architecture and construction.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	3	3	2	3	0	3
CO2	3	1	1	1	3	3	1	3	1	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
AVG.	3	2.4	2.4	2.2	3	3	1.8	3	1.8	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR1	Professional Practice & Management	30	2L	2	100

Course Objectives:

- To equip students with an understanding of legalities of professional practice of architecture.
- To learn about the role and responsibilities in architecture design, construction and administration of any project.
- To expand the student's knowledge and skill set with components regarding construction programming and management.

Course Outcomes:

Students shall be able to:

- CO1:** Learn about the architectural profession, running a practice, legalities and its organization.
- CO2:** Comprehend the legalities of professional practice and conduct as per the Architect Act 1972 and various amendments
- CO3:** Establish and manage the architectural practices, professional charges, services and build client relationships keeping in mind the responsibilities and liabilities.
- CO4:** Acquaint themselves with project and construction management, fundamentals of PERT, CPM, Time & Cost analysis, quality control and O&M.
- CO5:** Understand the fundamentals of business management, professional ethics and entrepreneurial skills required in the professional field after graduation.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	:
CO1	3	2	1	1	3	3	1	3	3	3	
CO2	3	2	1	1	3	3	1	3	3	3	
CO3	3	2	1	1	3	3	2	3	3	3	
CO4	3	2	1	2	3	3	2	3	3	3	
CO5	3	2	1	1	3	3	2	3	3	3	
AVG.	3	2	1	1	3	3	1.6	3	3	3	

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR2	Sustainable Architecture	30	2L	2	100

Course Objectives:

- To present day negative impacts of architecture on the environment, health and comfort of occupants, and building performance in light of the same.
- To explore and devise sustainable solutions for the said issues while exploring usage of renewable resources, minimizing and managing waste etc. to create healthy, productive built environments.

Course Outcomes:

Students shall be able to:

CO1: Identify the components of economical, social, and ecological sustainability.

CO2: Comprehend strategies and technologies to achieve sustainability in architecture.

CO3: Analyze sustainability rating systems and benchmarks.

CO4: Devise solutions using local materials and techniques.

CO5: Compute the Energy Assessment: Energy calculations through the whole building performance method.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	2	3	2	3
CO2	3	3	3	3	3	3	2	3	2	3
CO3	3	3	3	3	3	3	2	3	2	3
CO4	3	3	3	3	3	3	2	3	2	3
CO5	3	3	3	3	3	3	2	3	2	3
AVG.	3	3	3	3	3	3	2	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR3	Disaster Resistant Architecture	30	2L	2	100

Course Objectives:

- To learn about the various aspects of disaster and their impact on buildings and built environments.
- To understand the lateral stability, Indian scenario of disaster preparedness including National Disaster Policy, study of various response techniques as per different disasters for engineered and non-engineered building applications.

Course Outcomes:

Students will be able to:

CO1: Identify the types and causes of disasters..

CO2: Analyse the behaviour and impact of various types of disasters

CO3: Comprehend the pre and post-disaster mitigation measures and Disaster Management Plan

CO4: Acquire knowledge on the application of the national design and planning solutions, design guidelines and construction techniques for disaster resistant architecture.

CO5: Interpret the case studies in earthquakes, cyclones, landslides, floods, droughts and tsunami in India.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	3	3	1	3	1	3
CO2	3	2	2	1	3	3	1	3	1	3
CO3	3	2	3	1	3	3	1	3	2	3
CO4	3	3	3	2	3	3	1	3	2	3
CO5	3	3	3	2	3	3	2	3	2	3
AVG.	3	2.4	2.6	1.4	3	3	1.2	3	1.6	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR4	Architectural Design VII	135	9S	10	250

Course Objectives:

- To undertake design of built spaces as an urban insert; within a built context
- To understand and analyze its associated tangible and intangible complexities, existing architectural language and expressions.

Course Outcomes:

Students shall be able to:

CO1: Comprehend Urban Issues and their impact on architectural interventions with respect to

function, context and users' requirements.

CO2: Understand and interpret the relation between an architectural scale and an urban scale.

CO3: Learn various methods adopted for crowd control, circulation of different users and social needs of the people/ community.

CO4: Integrate with learnings acquired in concurrent subjects such as Sustainable Architecture and Disaster Resistant Architecture

CO5: Communicate and justify design through Design Narrative and Concept notes created through appropriate computer aid.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	2	3	3	2	3
CO2	3	3	3	2	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	2	3	2	3
CO5	3	3	3	3	3	3	2	3	2	3
AVG.	3	3	3	2.6	3	2.8	2.6	3	2	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR5	Dissertation & Thesis Seminar	90	6S	6	300

Course Objectives:

- To give opportunity to the students to undertake research on a topic of their interest related to spatial planning and design issues as deduced from the selected design thesis project.
- To further develop skills for reflective and close reading, critical evaluations of research publications, understanding of various research methods, data analysis
- To analyze their appropriateness for different types of research are undertaken.
- To formulate, write and present a research proposal.

Course Outcomes:

Students shall be able to:

CO1: Learn different types of research and how to formulate problem statements.

CO2: Apply various research methods, data collection, analysis and their application as per the type of research.

CO3: Familiarize themselves with tools and techniques for data management and analysis in architectural research.

CO4: Undertaking analysis via different tools and methods, in order to arrive at tangible recommendations and implementable guidelines.

CO5: Prepare a technical dissertation report, Document and publish findings through research papers and conferences, and integrate the same with the thesis project in the forthcoming semester.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	2	3	0	2	2	3
CO2	3	3	2	3	1	3	1	3	3	3
CO3	3	3	1	3	2	3	1	3	3	3
CO4	3	3	1	1	1	1	0	2	2	3
CO5	3	3	2	2	3	3	1	3	3	3
AVG.	3	3	1.6	2.4	1.8	2.6	0.6	2.6	2.6	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR6	Training Presentation	30	2S	2	250

Course Objectives:

- To evaluate the comprehension of the students for the functioning of an architectural practice
- To assess the students' understanding of project(s) execution.

Course Outcomes:

Students shall be able to:

CO1: Acquire knowledge about an architect's office administration, duties and responsibilities and types of practices.

CO2: Prepare the presentation for clients and submission drawings for a project as per the municipal requirements.

CO3: Understand management techniques for different resources (material and human resources), sequence of construction activities and site safety measures.

CO4: Perform critical appraisal of any project with respect to multiple factors such as context, climate change, sustainability and so on.

CO5: Prepare working drawings and details of various building elements and components, piped and wired services along with specifications, for a project.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	2	3	3	3	2	3	3
CO2	3	1	1	2	3	3	3	3	3	3
CO3	3	3	1	1	2	3	3	2	3	3
CO4	3	3	2	2	3	3	3	3	3	3
CO5	3	2	2	3	2	3	3	3	3	3
AVG.	3	2.4	1.4	2	2.6	3	3	2.6	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR7.1	Housing	45	3S	3	100

Course Objectives:

- To bring awareness to the students about different typologies and their characteristics, the various financing and development institutions in the public and private sector.
- To introduce Government policies, rules and regulations along with uses of different local materials and construction techniques of housing schemes in both urban and rural areas.

Course Outcomes:

Students shall be able to:

CO1: Understand housing dynamics, types and stakeholders in housing supply.

CO2: Identify various development policies and programmes of the government, in the housing sector.

CO3: Comprehend issues, develop strategy and plan housing as per the users income group, bye laws and regulations of a region.

CO4: Understand the Materials, emerging and innovative alternative technologies for cost effective, affordable and energy efficient housing.

CO5: Explore present housing scenario in India, financial institutions and their financial model.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	0	0	2	3	0	0	0	3
CO2	3	1	0	0	2	3	0	1	1	3
CO3	3	2	3	0	3	3	3	1	3	3
CO4	3	2	3	0	3	1	0	1	3	3
CO5	3	2	0	0	2	2	0	2	2	3
AVG.	3	1.6	1.2	0	2.4	2.4	0.6	1	1.8	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR7.2	Urban Design	45	3S	3	100

Course Objectives:

- To bring awareness to the students about the History, principles and varied definitions of Urban Design by the well-known designers throughout the world.
- To provide an overview of the legislations and policies at several levels throughout the globe and implementation of the same.

Course Outcomes:

Students shall be able to:

CO1: Learn the various definitions, principles and techniques of Urban Design.

CO2: Comprehend the concept of Urban Redevelopment, Renewal and Regeneration

CO3: Analyze the contributing factors for context analysis in Urban Design

CO4: Build and enhance empathy towards site and resultant effects on precinct for both tangible and intangible aspects.

CO5: Develop an aptitude towards Urban Design and its possible impact on holistic development.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	0	2	2	1	3	0	3
CO2	3	3	2	0	3	3	1	3	0	3
CO3	3	3	3	1	3	3	2	3	0	3
CO4	3	2	2	2	3	2	2	3	0	3
CO5	3	3	3	3	3	3	3	3	0	3
AVG.	3	2.6	2.2	1.2	2.8	2.6	1.8	3	0	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
9AR7.3	Urban Conservation	45	3S	3	100

Course Objectives:

- To introduce the theory of Building Preservation & Conservation to the students.
- To learn restoration and adaptive reuse of the built environment.
- To comprehend principles, ethics and values shaping the physical configuration, tangible and intangible components of historic urban areas.

Course Outcomes:

Students shall be able to:

CO1: Identify the concepts and prevailing practices in conservation, restoration, retrofitting, rehabilitation, consolidation, protection, adaptive reuse.

CO2: Infer preservation and conservation philosophies; Charters, Pioneers and national and international societies in the field of conservation.

CO3: Analyze and document the original building conditions with a focus on structure, material, context and precinct.

CO4: Employ Preservation strategies in Urban Conservation.

CO5: Summarise and critique the Urban Conservation works, strategies employed in various projects.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	0	3	3	1	3	1	3
CO2	3	2	3	1	3	3	2	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	2	3	3	3	3	2	3
AVG.	3		3		3	3		3		3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR1	Thesis Project	180	12S	10	500

Course Objectives:

- To enable the students to demonstrate their ability to conduct an original independent research to formulate an Architectural design project.
- To apply the knowledge and skills acquired during the degree programme therein.
- To augment and contribute to the existing knowledge database with regards to the designing of Interior, Landscape, Architecture and Urban spaces.

Course Outcomes:

Students shall be able to:

CO1: Learn to frame the capstone project based on scale, complexities and its need.

CO2: Explain the entire site planning, program formulation and spatial design aspects of their thesis project.

CO3: Critically analyse the integral role of structure and services in their planning and design process of thesis projects.

CO4: Optimize the financial aspects of design, construction and aesthetics for their thesis project.

CO5: Prepare a complete set of representative drawings, models and reports for their capstone project on appropriate scale.

Attainment of Program Outcomes in Course outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR2.1	Interior Design	45	3S	3	100

Course Objectives:

- To focus on research of interior design theories, concepts and their application in the thesis project.
- To enhance the overall comprehension of the built environment and for the purpose of finding holistic design proposals for interior spaces, in their respective projects.

Course Outcomes:

Students shall be able to:

CO1: Identify the users, activities, types, configuration and organization of spaces, in respective thesis projects.

CO2: Illustrate the Surface and Visual characteristics of Interior elements and their effect on the perception of space.

CO3: Employ understanding of thermal, visual, auditory and hygiene conditions necessary for comfort and convenience of occupants in respective thesis projects..

CO4: Coordinate proposed interior scheme with structural layout, HVAC, electrical and plumbing services.

CO5: Summarize the Interior Design process, concepts, spatial planning and human dimensions in accordance to respective thesis projects.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR2.2	Landscape Design	45	3S	3	100

Course Objectives:

- To find design solutions for the thesis project keeping in mind the design requirements and prevailing site conditions.
- To augment with research on the aspects of Landscape design and associated theories best suited for the respective thesis projects.
- To develop an ability to achieve a comprehensive design for open spaces.

Course Outcomes:

Students shall be able to:

CO1: Identify the users, activities, types, configuration and organization of outdoor spaces, in respective thesis project sites.

CO2: Find out challenges in campus or precinct planning and landscape interventions with a focus on conserving or preserving natural attributes of the site and its resources.

CO3: Communicate through visual and graphical language associated with landscape concept and resultant proposal.

CO4: Co-relate and coordinate site planning and landscape interventions with site and building level services.

CO5: Prepare a comprehensive set of landscape drawings explaining the design scheme for each thesis project.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR2.3	Urban Design	45	3S	3	100

Course Objectives:

- To find design solutions for the thesis project keeping in mind the design requirements and prevailing site and surroundings' conditions.
- To understand issues at urban level, and develop ability to assess the impact of infrastructure developed in surrounding areas and vice-versa.

Course Outcomes:

Students shall be able to:

CO1: Demarcate impact area with regards to urban design interventions for their thesis project.

CO2: Identify challenges and prospects in selected region, precinct, context with urban design potential in respective thesis project and

CO3: Analyze the same with the lens of urban design theories, principles and socio-economic and cultural factors.

CO4: Assess and strategize urban design solutions concerning the stakeholders, their participation with respect to thesis projects.

CO5: Conclude with a comprehensive set of drawings explaining the urban design scheme, strategies and interventions for respective thesis projects.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR3.1	Plumbing Design	45	3S	3	100

Course Objectives:

- To learn about water systems, their supply, drainage, management and their related aspects.
- To identify available technologies respective to project requirements while giving them a fair idea about design considerations, standards and mandatory provisions for their respective thesis projects.

Course Outcomes:

Students shall be able to:

CO1: Gather the information related to sources and quality of water and infrastructure regarding disposal with respect to thesis projects.

CO2: Calculate plumbing and sanitation requirements for respective thesis projects keeping in mind, users, spaces and standards and benchmarks.

CO3: Create conceptual plumbing layout for water and wastewater reduction.

CO4: Coordinate proposed plumbing scheme with structural layout, HVAC, electrical and landscape services.

CO5: Summarise and provide plumbing layouts, specifications and calculations in accordance to respective thesis projects for water and waste water reduction.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR3.2	Electrical Design	45	3S	3	100

Course Objectives:

- To support students to develop an understanding of Electrical design and layout in their thesis project.
- To introduce available technologies respective to project requirements giving them a fair idea about design considerations, standards and mandatory provisions.

Course Outcomes:

Students shall be able to:

CO1: Identify parameters for electrical services and its design with respect to site and building provisions.

CO2: Calculate power requirement for respective thesis project keeping in mind, users, spaces and standards and benchmarks.

CO3: Comprehend the same with respect to specific requirements, identification, and applications.

Create conceptual plumbing layout for water and wastewater reduction.

CO4: Coordinate proposed plumbing scheme with structural layout, HVAC, electrical and landscape services.

CO5: Summarise and provide plumbing layouts, specifications and calculations in accordance to respective thesis projects for water and waste water reduction.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3

Course Code	Course	Contact Hours	L/S	Weekly Contact Hours	Marks
10AR3.3	Mechanical Design	45	3S	3	100

Course Objectives:

- To develop the students' understanding of varied mechanical systems in line with their thesis projects.
- To introduce available technologies giving them a fair idea about design considerations, standards and mandatory provisions.

Course Outcomes:

Students shall be able to:

CO1: Identify Mechanical Services design for different spaces and activities

CO2: Compute the system requirements for various mechanical services.

CO3: Comprehend the concept of net zero energy in thesis projects.

CO4: Integrate Mechanical system solutions in the architectural thesis project.

CO5: Conceptualize aspects of operation and maintenance with specifications at site and building level.

Attainment of Program Outcomes in Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	1	3	3	3
CO2	3	3	3	3	3	3	1	3	3	3
CO3	3	3	3	3	3	3	1	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3
CO5	3	3	3	3	3	3	1	3	3	3
AVG.	3	3	3	3	3	3	1	3	3	3