Crafting Dimensions that Speak the Language of the New Millennium
SINHGAD TECHNICAL EDUCATION SOCIETY'S
SINHGAD COLLEGE OF ARCHITECTURE
(Affiliated to University of Pune & Approved by AICTE& COA) (ID No. PU/PN/Engg./151/2000)
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Founder President	Founder Secretary	Principal

Program Outcome (PO) defined by institution

At the end of a program, students should be able to do

PO 1. **Architectural Knowledge:** Work professionally toward synthetic architectural design solutions that incorporate requirements of users, contextual and environmental connections, technological systems with sensible and responsible approach to environmental, historical, and cultural commitments.

PO 2. **Professional Competence:** Work with established professional standards and analyze various subjects related to architectural and allied fields

PO 3. **Technological Knowhow:** Apply appropriate technology required through design research

PO 4. **Commitment to the society:** Crafting sensible and responsible architects for future

PO 5. **Sustainable Approach:** Understand the real-life situation in architectural practice and its impact on environment and sustainable factors

PO 6. **Architectural Ethics:** Work with ethical responsibilities and analyze critically by conducting research

PO 7. **Collaborative work culture:** Work in collaboration in architectural profession for designing and execution, as well as develop interpersonal and leadership skills

PO 8. **Communication skills:** Apply effective communication skills using advanced tools in producing professional quality graphic presentations and technical drawings/documents

Program Specific Outcome (PSO) defined by institution

PSO 1 Apply the knowledge of natural condition of site and environment, history and cultural context, building material, construction techniques and services, structural mechanics and building economics to design buildings rationally for user and environment friendly

PSO 2. Apply creative ideas, principles, theory rationally

PSO 3. Apply appropriate methods, media, modern technology to resolve architectural and multi-disciplinary researches

SINHGAD COLLEGE OF ARCHITECTURE	
COURSE OUTCOMES – FIRST YEAR - TERM I	
	students at the end of the semester will be able to …
1	**FIRST YEAR B.ARCH. - TERM I - BASIC DESIGN (1201901-SS)**
CO1	Explain with illustration visual elements of design and principles of design
CO2	Explain and interpret graphically multi-sensory aspects of space
CO3	Explain techniques to improve creativity
CO4	Explain with illustrations space making through basic elements of design and principles of composition
CO5	Explain with illustrations Role of experience, memory, fantasy, reality, imagination in design.
CO6	Explain with illustrations Sources of inspiration such as nature, history, material, climate, geometry, paradox, etc. for creativity
2	**FIRST YEAR B.ARCH. - TERM I - BUILDING CONSTRUCTION & MATERIALS I - (1201902-P) (1201903-SV)**
CO1	Explain building elements from foundation to roof and concept of load transfer
CO2	Explain and list characteristics, properties and types of building materials and their applications.
CO3	Describe and draw Strip Foundations suitable for load bearing structures in stone and brick up to plinth level
CO4	Draw and explain load bearing / non load bearing masonry construction using materials such as Stone, bricks, concrete blocks, soil stabilized blocks, rammed earth construction.
CO5	Explain and draw openings by types of arches and lintels, principles and terminology of arch construction
CO6	Explain with sketches about the Bamboo as construction material and the construction joineries.
3	**FIRST YEAR B.ARCH. - TERM I - THEORY OF STRUCTURES I - (1201904-P)**
CO1	Explain and describe effects and system of forces, principle of transmissibility and superposition, Equilibrium of concurrent and non concurrent forces, concept and calculation of dead load and live load.
CO2	Explain and calculate regarding internal properties of material i.e. stress, strain, elastic moduli, Behaviour of ductile and brittle material, Composite material.
CO3	Explain and describe transfer of load in load bearing as well as framed structures, earthquake resisting measures for the load bearing structure and importance of soil bearing capacity .
CO4	Explain and describe concepts of center of gravity, moment of inertia and calculation for various shapes, Radius of Gyration and Parallel Axis theorem.
CO5	Explain and calculate different types of supports, different types of beams and loads and Action of these parameter on structures.
CO6	Explain Calculate and draw SFD and BMD of Simply supported beams and understanding of behaviour of SSB
4	**FIRST YEAR B.ARCH. - TERM I - ARCHITECTURAL GRAPHICS & DRAWINGS I - (1201905-SS)**
CO1	Depict fundamentals of architectural representation through drafting techniques.
CO2	Construct graphically two and three dimensional drawings representing point, lines and planes.
CO3	Explain and draft architectural drawings with appropriate scale and annotations.
CO4	Visualise and Sketch exterior and interior spaces proportionately.
5	**FIRST YEAR B.ARCH. - TERM I - HISTORY OF ARCHITECTURE & CULTURE I - (1201906-SS)**
CO1	Illustrate through sketches the architectural features and characteristics of ancient River Valley Civilizations, including the Nile, Tigris and Euphrates, and Indus, and categorize their influences on subsequent architectural developments.
CO2	Compare and contrast the unique architectural styles and construction techniques employed by tribal communities in India, and analyze their cultural significance and relationship with the natural environment.
CO3	Describe and draw the evolution of Buddhist architecture as stupas, chaityas, and viharas, rock-cut architecture, with religious and symbolic implications
CO4	Summarize with the architectural features and design principles of early Hindu temples and other structures during the Maurya, Gupta, and Chalukya periods emphasising on historical and cultural contexts.
CO5	Analyze with sketches development of architecture in Southern India, focusing on temples and temple towns under the Pallavas, Cholas, Pandyas, Nayaks, Hoysalas, and the Vijaynagar kingdom in terms of town development, stylistic elements, religious significance
CO6	Explain with suitable sketches of the traditional architecture of Maharashtra, including its distinct features, materials, and construction techniques, and its influence on regional and historical architectural practices.
6	**FIRST YEAR B.ARCH. - TERM I - COMMUNICATION SKILLS - (1201907-SS)**
CO1	Demonstrate written communication skills by Paraphrasing, Grammar and punctuation, vocabulary pertaining to architecture and design, technical writing, site visit report, letters, tour reports, appraisals, email and expressing ideas
CO2	Demonstrate verbal communication skills through presenting an idea/ thought, debate, group discussion and non-verbal communication such as body language, posture, stance etc.
CO3	Demonstrate graphical communication skills of analytical diagrams, information graphics, flow charts, mind maps, posters, logo design.
CO4	Use digital tools for communication, such as Word and numerical based software, and visual presentation techniques such as photography, videography etc.
7	**FIRST YEAR B.ARCH. - TERM I - WORKSHOP I - (1201908-SS)**
CO1	Demonstrate types of techniques of architectural model-making
CO2	Apply new materials for specific appearance with respect to scale, proportion, texture and finishes for model-making
CO3	Demonstrate architectural model making for subjects like Basic design, Architectural design, Building construction and materials and Architectural Graphics

SINHGAD COLLEGE OF ARCHITECTURE	
COURSE OUTCOMES – SECOND YEAR - TERM I	
	students at the end of the semester will be able to …
1	**SECOND YEAR B.ARCH. - TERM I - ARCHITECTURAL DESIGN II - (2201917-SV)**
CO1	Design a dwelling after studying site, climate, socio-cultural aspects, function, materials, services, aesthetics and universal design principles and demonstrate the design proposal (Major Project)
CO2	Analyse site and case studies, develop concept of the dwelling
CO3	Demonstrate the design with architectural drawings of Site, building plan and unit plans, sections, elevations, views, make models
CO4	Demonstrate the design of a space with architectural details (Minor Project)
2	**SECOND YEAR B.ARCH. - TERM I - BUILDING CONSTRUCTION & MATERIALS III - (2201918-P) (2201919-SV)**
CO1	Explain and sketch shallow foundation types based on soil mechanics and its application in construction
CO2	Discuss and list components, characteristics, properties and types of building materials for RCC construction
CO3	Explain, analyse and sketch the footing plan for a small span structure with ground and plinth beam detail and plinth formation
CO4	Explain, analyse and sketch the floor plan for a small span structure with understanding of 1 way, 2 way slabs and column beam slab junctions
CO5	Explain and discuss window details for Steel-framed/ aluminum/ UPVC windows, its need and its construction details in terms of sketches
CO6	Discuss and explain the advantages for using specific flooring and paving materials and floor finishes at specific locations
3	**SECOND YEAR B.ARCH. - TERM I - THEORY OF STRUCTURES III - (2201920-P)**
CO1	Analyse Fixed beam with UDL or central or eccentric point load. To understand advantages of continuous beam over SSB, IS codal provisions. To understand theory of torsion and its application.
CO2	To understand action of loads on a structure as per I.S.875. To understand design methodologies such as WSM and LSM and its application as per type of structure. To understand wood as a structural material and to design a timber as a flexural member.
CO3	To Understand Concrete as a material, it's Grades, all the individual constituents, their sizing, proportioning, Production and Testing of Concrete, Form work and Stripping as per I.S.456.To understand role of steel in RCC, its properties and grades.Also, L.S.M Flexural Diagram for M25 grade and Fe500 steel.
CO4	To understand concept of one way and two way slab and to design it according to IS 456:2000.Also to design Cantilever Slab resting on a Beam,Toilet Sunken Slabs with Inverted Beams, Passage Slabs as per codal provisions.
CO5	To understand and design Simply supported RCC beam with an understanding of load transfer and theory for detailing for a beam supporting a cantilever porch.
CO6	To understand concept of column, classification as short and long column and to design short column as per IS 456:2000
4	**SECOND YEAR B.ARCH. - TERM I - COMPUTER AIDED DRAWING & GRAPHICS - (2201921-SS)**
CO1	Use AutoCad to generate graphics with different line weights, colours, textures.
CO2	Use AutoCad to generate Plans, Elevations, Sections with rendering and textures of students own Architectural design.
CO3	Produce Hand drawn views of Interior and Exterior with use of water colours / poster colours / pencil colours
CO4	Render different elements and textures with use of water colours / poster colours / pencil colours (Hand drawn)
5	**SECOND YEAR B.ARCH. - TERM I - HISTORY OF ARCHITECTURE & CULTURE III - (2201922-SS)**
CO1	Explain with sketches, significance and concepts of European architecture developmet through historical period till 17th century AD that are formed as a product shaped by factors like religion and society.
CO2	Analyze the evolution and explain with suitable sketches key features of typologies and components along with formal, structural and stylistic aspects of architectural development in European Architecture
CO3	Distinguish between European periods and understand the factors that bring about the process of change in architectural manifestations and its meanings.
CO4	Measure, draw and generate digital documentation of a building constructed in any one typology of European style of architecture studied wrt features, elements, planning, function, forms, materials and techniques of construction.
6	**SECOND YEAR B.ARCH. - TERM I - BUILDING SERVICES I - (2201923-P) (2201924-SS)**
CO1	Explain and apply the principles and techniques of supplying of water in building premises, requirement, storage, distribution, pipes and piping network, valves, etc.
CO2	Explain installations and applications of types of taps, faucets, fittings and advanced proprietary systems used in baths, kitchen and WC units.
CO3	Explain various systems of hot water supply, use of conventional and non-conventional energy, components, insulation and safety measures, etc.
CO4	Explain with sketches types of sanitary fittings installation, traps and their working, techniques of vertical drainage system in medium and high rise buildings
CO5	Explain with sketches underground drainage systems, sewers, storm water drainage and rain water harvesting methods
CO6	Explain waste disposal within premises like septic tanks, waste water and sewage treatment plant, decentralized waste water treatment and bio-gas plant
7	**SECOND YEAR B.ARCH. - TERM I - CLIMATOLOGY - (2201925-SS)**
CO1	Understand the importance of Climatology in Architecture; Earth Sun relationship along with variable and invariable factors of Climate. Understand climate at Global, regional, macro and micro level. Use of tool like solar chart to determine position of sun (azimuth and altitude angle).
CO2	Understand global classification of climate as well as classification and characteristics of different climatic zones in India.
CO3	Understand and Design Passive design strategies for different climatic zones in India at various scales (ie regional, site, building, building components)
CO4	Understand wind formation, flow , its effects and design strategies for thermal comfort. Understand the parameters of thermal comfort; Use of tools like Psychromatric chart and Bio-climatic chart for analysis and application of design strategies
CO5	Understand types of shading devices and Design sun shading devices with a technical method considering location of the structure, position and orientation of the openings, light, comfort, matereial, aesthetics etc.
CO6	Decide an appropriate location of a building on a larger site with respect to wind and sun by using Site matrix analysis method.

SINHGAD COLLEGE OF ARCHITECTURE

COURSE OUTCOMES – THIRD YEAR - TERM I

	students at the end of the semester will be able to …
1	**THIRD YEAR B.ARCH. - TERM I - ARCHITECTURAL DESIGN IV - (3201935 SV)**
CO1	Design of an architectural project of a campus (Major Project) with emphasis on site planning & relationship of built and open spaces, circulation and movement pattern, activity pattern, architectural character, image, identity, philosophy etc.
CO2	Follow the process of design progressively from site analysis, case studies, design concept to final design
CO3	Demonstrate the design with architectural drawings and models
CO4	Design of a space within stipulated time and demonstrate with architectural details (Minor project/esquee)
2	**THIRD YEAR B.ARCH. - TERM I - BUILDING CONSTRUCTION & MATERIALS V - (3201936-P) (3201937-SV)**
CO1	Explain characteristics, applications of materials used for construction of interior essentials such as Wood, wood derivatives, laminates, veneers, plastics and metal sheets, Paints and varnishes and hardware
CO2	Draw and explain shallow and deep foundations for basement, high-rise construction for different soil conditions, waterproofing details and describe construction details of cast-in-situ and precast Retaining wall
CO3	Draw and explain various types of RCC floor construction such as flat plate, flat slab, ribbed slab, waffle slab, band beam and slab, pre-stressed slabs along with earthquake resistant features
CO4	Draw and explain partition construction using proprietary and non-proprietary systems using non-timber materials
CO5	Draw and explain suspended ceiling construction using proprietary and non-proprietary systems using various materials
CO6	Design and draw furniture details for residential, commercial, office buildings and assembly details using timber and other material along with finishing and upholstery
3	**THIRD YEAR B.ARCH. - TERM I - THEORY OF STRUCTURES V - (3201938-P)**
CO1	Design and calculate doubly reinforced beam, L beam, T beam and understand the structural behaviour of coffered slabs, flat slabs and IS code provisions
CO2	Explain reasons for development of eccentricity in columns and calculate & design columns at multiple floors with variation in percentage of steel, grade of concrete
CO3	explain types of shallow and deep foundations and calculate & Design of isolated foundations for single and double shear failure, and combined footings
CO4	Design and analyse steel girder with flange plates, stanchion with flange plates, pad and explain structural behaviour under loads
CO5	Explain need of retaining walls, angle of repose and analyse stability of gravity retaining walls
CO6	Explain process of pre-tensioning and post tensioning, use of high strength concrete, steel and analyse a beam for stress calculation at extreme fibres
4	**THIRD YEAR B.ARCH. - TERM I - LANDSCAPE ARCHITECTURE - (3201939-SS)**
CO1	Explain with drawings of elements (natural and manmade)and their application in achieving functional, aesthetic, environmental and cultural goals in landscape architecture
CO2	Explain with illustrations about various principles and approaches in Landscape design from contemporary as well as historic landscapes
CO3	Draw in details and explain various materials used for construction hard landscape (civil work)
CO4	Explain characteristics and contribution of softscape (plant material) in creating character to outdoor spaces
CO5	Explain basics and process of site planning
5	**THIRD YEAR B.ARCH. - TERM I - ELECTIVE I- CONTEMPORARY ARCHITECTURE - (3201940-SS)**
CO1	Analyse and describe Post-Modernism and other movements in Architecture since the second half of 20th century
CO2	Analyse and describe Post 2000 CE trends in architecture, various critical discourses and current architectural issues
CO3	Write a research essay on analysis and critical appraisal of Architecture across the world
6	**THIRD YEAR B.ARCH. - TERM I - BUILDING SERVICES III - (3201941-P) (3201942-SS)**
CO1	Explain basic knowledge of conditions of Human thermal comfort, factors affecting natural ventilation and strategies to effect natural ventilation
CO2	Apply and Explain Systems, components of mechanical ventilation, psychometric charts
CO3	Explain and draw Passive heating & cooling, low energy mechanical techniques
CO4	Discuss & explain principles, types, components of air-conditioning systems
CO5	Discuss & analyze onsite case study of air-conditioning system. Explain & draw Air-conditioning and ducting layout – Schematic calculations and design for a space / part of a building.
7	**THIRD YEAR B.ARCH. - TERM I - WORKING DRAWING I - (3201943-SS)**
CO1	Manually draft working drawings explaining execution point of view of a building with graphical presentation of all the components, dimensioning and annotations.
CO2	Apply IS Codes and internationally accepted norms / conventions / methods of repairing a working drawing along with tabulation of schedules of materials, finishes and hardware.
CO3	Draft working drawing of an architectural design project having load bearing structure, details related to the design such as doors / windows / railings / kitchen platform etc. to suitable scale

SINHGAD COLLEGE OF ARCHITECTURE

COURSE OUTCOMES – FOURTH YEAR - TERM I

	students at the end of the semester will be able to …
1	**FOURTH YEAR B.ARCH. - TERM I - ARCHITECTURAL DESIGN VI - (4201953-SV)**
CO1	Prepare architectural design program of an urban housing of multi-family, multi-typology for 100 to 200 tenements
CO2	Analyse site, develop concept and design progressively considering physical & socio-cultural context, circulation, building technology & services, aesthetics, development rules & regulations
CO3	Demonstrate the design with architectural drawings and model
2	**FOURTH YEAR B.ARCH. - TERM I - ADVANCED BUILDING CONSTRUCTION & SERVICES I - (4201954-SV)**
CO1	Design, draw and explain construction of multi-basements for parking with details of constructional, various services and accesses
CO2	Design, draw and explain details of types, construction and services of swimming pools
CO3	Option 1- Design, draw and explain long span steel structures
	Option 2- Design, draw and explain architectural and constructional details of medium-scale Industrial structures
3	**FOURTH YEAR B.ARCH. - TERM I - URBAN STUDIES I - (4201955-SS)**
CO1	Describe urban planning, urban design in context of Architecture and Principles, theories of Urban Planning and Urban Design
CO2	Explain various aspects such as traffic-transportation, socio- economic, landscape etc. influencing urban development and rationale of DCR
CO3	Explain Urban residential developments such as neighbourhood planning, high-rise housing, slum rehabilitation, public housing, town planning schemes etc.
CO4	Explain affordable housing and impact of unplanned growth of cities
4	**FOURTH YEAR B.ARCH. - TERM I - RESEARCH IN ARCHITECTURE II - (4201956-SS)**
CO1	Explain various techniques of qualitative and quantitative data collection and analysis
CO2	Demonstrate skill of Technical Writing in writing a research article
CO3	Present a research paper in a seminar
5	**FOURTH YEAR B.ARCH. - TERM I - QUANTITY SURVEYING & SPECIFICATION WRITING I - (4201958-P)**
CO1	Explain different methods of Quantities and Estimation for items of work of a structure and its importance
CO2	Explain importance of Specifications and relationship with bill of quantity, schedule of rate and working drawing.
CO3	Explain mode of measurement as per IS 1200 and unit measurement
CO4	Work out quantities and prepare measurement sheet and abstract with different methods for all items for a load bearing structure of 15-30 sqm for below the plinth portion
CO5	Work out quantities and prepare measurement sheet and abstract for all items for RCC G+1 structure of approximately 100-150 sqm along with quantities for plumbing and sanitation items
CO6	Write item-wised detailed specification for various items
6	**FOURTH YEAR B.ARCH. - TERM I - PROFESSIONAL PRACTICE - (4201959-P)**
CO1	Describe nature, scope and avenues of service and professional practice as an Architect, Role of an Architect as a technical professional and changing nature of Architects
CO2	Describe The Architects Act 1972 and The Council of Architecture
CO3	Describe modes of professional practice such as Organizations, Services, Fees, Site supervision, Documentation, etc.
CO4	Describe Income tax, Goods & Service Tax and Professional tax, Banking, Insurance, and laws applicable to architects
CO5	Describe Legal duties of Architects in Arbitration and Valuation.
CO6	Describe professional organizations

SINHGAD COLLEGE OF ARCHITECTURE	
COURSE OUTCOMES – FIRST YEAR - TERM II	
	students at the end of the semester will be able to …
1	**FIRST YEAR B.ARCH. - TERM II - ARCHITECTURAL DESIGN I - (1201909-SV)**
CO1	Analyze and explain with illustrations about small scale built spaces with respect to its context, comfort, function, anthropometrical data and layout
CO2	Design and demonstrate a single activity space applying design principles through drawings, sketches and models.
CO3	Document and analyse a rural settlement and architecture with respect to lifestyle, climate and social structure
CO4	Design and demonstrate an architectural project in context of studied and visited rural settlement
2	**FIRST YEAR B.ARCH. - TERM II - BUILDING CONSTRUCTION & MATERIALS II - (1201910-P) (1201911-SV)**
CO1	Describe earthquake resistant measures in load bearing construction. Explain and draw Reinforced Masonry construction of walls, pillars, domes and vaults.
CO2	Describe derivatives of timber & its characteristics, common tests, market forms and applications in building construction. Identify and application of various carpentry tools, roofing materials for small span sloping roofs
CO3	Explain and draw timber Single and double floor construction for G+1 building and timber staircases with terminology and construction
CO4	Design, explain and draw various types of timber paneled and flush doors, timber windows with necessary joinery details and finishes required.
CO5	Design, explain and draw construction of various types of roofs for spans up to 6m and of various types of timber roof truss, forces in truss members and king post and queen post trusses
CO6	Design, explain and draw wooden partition and wall paneling used for interior application along with necessary joinery details, finishes required.
3	**FIRST YEAR B.ARCH. - TERM II - THEORY OF STRUCTURES II - (1201912-P)**
CO1	Calculate and draw SFD and BMD for Overhanging beam, understand the behaviour of beam as per loading and support condition
CO2	Explain truss as lattice construction and structural actions in its members also able to calculate member forces i.e. tension or compression and understand the behaviour of truss as per internal force generated.
CO3	Calculate and understand the Effect of Forces on a Spanning Members(beams) in terms of bending stress, shear stress and deflection
CO4	Explain Euler's and Rankine's theory for columns, terminologies of column, long and short column, calculate stresses in column c/s for eccentrically loaded column,
4	**FIRST YEAR B.ARCH. - TERM II - ARCHITECTURAL GRAPHICS & DRAWINGS II - (1201913-SS)**
CO1	Draw and explain composite and complex three dimensional objects of Solid Geometry including building components formed by addition and/or interpenetration of various objects, surface development of various three dimensional objects and Orthographic projections of true shapes of sectional planes
CO2	Draw one-point and two-point Perspective Drawings of objects and buildings/ building components using various methods including grid method, and bird's eye and worm's eye view
CO3	Draw Sciography (shades and shadows) for 3-Dimensional objects and buildings on plans, elevation, isometric and perspective
5	**FIRST YEAR B.ARCH. - TERM II - HISTORY OF ARCHITECTURE & CULTURE II - (1201914-SS)**
CO1	Describe and draw relevant sketches of historical evolution, relevance, and concepts of Islamic architecture and post-Mughal architecture until the 19th century AD, which are produced as a result of factors like religion and society
CO2	Explain with appropriate sketches the development of architectural typologies and components, as well as formal, structural, and stylistic characteristics of Islamic architecture till the 19th century
CO3	Describe with sketches evolution in architectural expressions and to distinguish across Islamic styles and periods.
CO4	Prepare measured drawing, sketch and digital documentation of a building built in a vernacular architectural style that has been researched in terms of its characteristics, elements, planning, function, forms, materials, and construction methods.
6	**FIRST YEAR B.ARCH. - TERM II - FUNDAMENTALS OF ARCHITECTURE - (1201915-SS)**
CO1	Describe about the profession of Architecture and its distinguishing characteristics with respect to other professions.
CO2	Describe about scope of architecture as a discipline & Explain scope and significance of subjects in architectural curriculum
CO3	Explain fundamentals of architecture -function , structure ,culture and environment and their integration into the architectural form
CO4	Describe factors affecting architectural design- site, context , function, circulation, structural system, materials ,sustainability and aesthetics.
CO5	Explain concept of shelter and introduction to various building typologies and their design concerns
7	**FIRST YEAR B.ARCH. - TERM II - WORKSHOP II - (1201916-SS)**
CO1	Use digital tools of Model-making for architecture
CO2	Draft using software of 3D model making
CO3	Explain how to work on digitals tools
CO4	convert 3D models into 2D graphics and make them presentable

SINHGAD COLLEGE OF ARCHITECTURE	
COURSE OUTCOMES – SECOND YEAR - TERM II	
	students at the end of the semester will be able to …
1	**SECOND YEAR B.ARCH. - TERM II - ARCHITECTURAL DESIGN III- (2201926-SV)**
CO1	Analyse climate, socio-cultural aspects, architectural style of a place after study tour and measure, document architectural characteristics and prepare a brief of an appropriate architectural project (Major Project)
CO2	Design the project after studying site, function, materials, services, aesthetics and universal design principles and demonstrate the design proposal
CO3	Analyse site and case studies, develop concept of the project
CO4	Demonstrate the design with drawings of Site, building plan and unit plans, sections, elevations, views, make models
CO5	Demonstrate a design of a space of the same project with architectural details (esquee) (Minor Project)
2	**SECOND YEAR B.ARCH. - TERM II - BUILDING CONSTRUCTION & MATERIALS IV - (2201927-P) (2201928-SV)**
CO1	Explain special concretes, lightweight concrete, ready-mixed concrete, ferro-cement etc, storage on site, identification of good quality material, field & lab tests
CO2	Identify causes of dampness, methods or treatments of damp, water-proofing with various water proofing materials for brick on edge, terraces, chhajja, toilet with appropriate drawings
CO3	Draw and explain R.C.C structural details for balcony slabs, canopies and various types of precast and in-situ RCC stairs, along with earthquake resistant measures
CO4	Draw and explain elevators, escalators, conveyors types, size, capacity, speed with mechanical safety methods, civil work for installation.
CO5	Draw and explain various types of sliding and folding doors and construction of Bay Window
CO6	Describe glass and plastic as a building materials, properties, applications, types, application
3	**SECOND YEAR B.ARCH. - TERM II - THEORY OF STRUCTURES IV - (2201929-P)**
CO1	Discuss about the different supporting system of balcony slab and design cantilever and overhanging balcony slab
CO2	Explain the concept of under reinforced, over reinforced and balance reinforced section and analysed beam with strain diagram. Do Audit of load bearing structure for the various structural and Non structural elements
CO3	Design dog legged R.C.C. staircase and one way continuous slab and understanding the dividing larger room in smaller one way and two way slab unit
CO4	Discuss about elements of steel structure, properties of steel as a structural material, classification of section and limit state of design of steel structure
CO5	Explain the plastic design of steel structure and design small span girders and stanchions for a factory building
4	**SECOND YEAR B.ARCH. - TERM II - ENVIRONMENTAL SCIENCE - (2210930-SS)**
CO1	Understand and correlate the significance of various natural resources and its management to architecture.
CO2	Describe biogeochemical cycles and classify ecosystems based on the components, structural and functional aspects, direct and indirect values.
CO3	Explain the values (consumptive, productive, social, ethical, aesthetic, option) of biodiversity and identify threats to biodiversity and conservation measures.
CO4	Summarize different types of pollutions along with their control measures and identify its correlation with architecture.
CO5	Explain the significance of Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act and Forest Conservation Act and analyze the interdepency of environment and human health describing the need for Environment clearance for construction projects, green buildings and green building rating systems.
5	**SECOND YEAR B.ARCH. - TERM II - HISTORY OF ARCHITECTURE & CULTURE IV - (2201931-SS)**
CO1	Relate the effect of Industrial Revolution in the resulting architecture of 18th & 19th century in Europe
CO2	Identify the elements and unique characteristics of Revival architecture in Europe and America
CO3	Describe and Illustrate the Colonial architecture of India and Document a structure within close vicinity
CO4	Distinguish with sketches Stylistic explorations with appropriate examples: Expressionism, De Stijl, Art Deco, etc
CO5	Analyze the influence of Bauhaus on Modernism and international style of Architecture
CO6	Describe and Illustrate the Post Independence architecture of India and Create a POSTER depicting the contribution of work of any famous architect
CO7	Describe and Illustrate architecture of the Post Liberalization period in India
6	**SECOND YEAR B.ARCH. - TERM II - BUILDING SERVICES II - (2201932-P) (2201933-SS)**
CO1	Explain and apply collection, treatment and disposal of organic and in-organic waste.
CO2	Explain and apply integrated design approach for daylighting through passive design strategies, methods for predicting daylight and new technologies to access (light pipes) and control daylight (Lighting Controls)
CO3	Explain and apply different types of lighting sources,) lighting systems (Direct & Indirect) and create an electrical layout of a given space
CO4	Explain and explain process of Electrical installations in a building along with various wiring systems, control and safety devices
CO5	Explain and suggest the low voltage electrical systems like Wi Fi, LAN Network, CCTV, FA, PA and various access systems and its integration in BMS.
7	**SECOND YEAR B.ARCH. - TERM II - SITE SURVEY & ANALYSIS - (2201934-SS)**
CO1	Carry out measurements in horizontal plane, survey stations, survey lines, open and closed traverse, use total station, EDM, measure along sloping ground, explain terms in linear measurement, land demarcation drawings.
CO2	Carry out angular measurement in HP by prismatic compass, theodolite, calculatein angle measurement, error determination and distribution, area determination.
CO3	perform leveling by auto level/dumpy level and calculation by HI method and Rise and fall method and to understand the concept of bench mark.
CO4	Perform plane table survey by intersection and radiation method and understand the purpose, advantages of it, to calculate area using PTS
CO5	Plot contours by indirect method i.e. method of squares, to do interpolation of contours, to understand terminologies in block contour survey and purpose of contouring
CO6	Know Natural and Manmade aspects, physical and socio-cultural context of site enabling Site planning

SINHGAD COLLEGE OF ARCHITECTURE

COURSE OUTCOMES – THIRD YEAR - TERM II

	students at the end of the semester will be able to …
1	**THIRD YEAR B.ARCH. - TERM II - ARCHITECTURAL DESIGN V - (3201944-SV) (3201945-P)**
CO1	Develop a building design program in urban context preferably in a different socio-geographic setting and **document the study done in tour** on climate, social structure, culture, architectural typology, construction technology, urban fabric, economy, etc (Major Project)
CO2	Analyse site and case studies, develop design concept of the project
CO3	Demonstrate the design with architectural drawings and models
CO4	Design a minor architectural project within a stipulated time and demonstrate a with architectural details (Minor project/esquee)
2	**THIRD YEAR B.ARCH. - TERM II - BUILDING CONSTRUCTION & MATERIALS VI - (3201946-SV)**
CO1	Discuss and list characteristics, properties, applications and types of Metal and Metal alloys used as building materials.
CO2	Draw and explain with sketches construction details of fencing and suitable gate as per design parameters.
CO3	Draw and explain of construction methods of steel trusses for low rise buildings and connection details wrt. earthquake resistant features.
CO4	Explain with suitable sketches methods of construction of various components of steel structures.
CO5	Explain with Sketch concept of modular coordination along with planning and construction details.
CO6	Define application of earthquake resistant systems in framed structures.
3	**THIRD YEAR B.ARCH. - TERM II - THEORY OF STRUCTURES VI - (3201947-P)**
CO1	Analyse and explain need of cantilever retaining wall, Counter Fort Retaining Wall and structural behaviour of water tanks
CO2	Calculate and design structural detailing, framing plan and schedule for G+2 RCC framed structure
CO3	Calculate and design compound stanchions, purlins, tension members and compression members in a truss using steel sections with bolted and welded connections
CO4	Calculate and design structural drawings of a medium span factory building in steel
CO5	Analyse and explain wind load for high-rise building (G+9)
CO6	Explain structural behaviour and application of advanced structural systems including domes, vaults, tensile structures, high rise structural systems
4	**THIRD YEAR B.ARCH. - TERM II - RESEARCH IN ARCHITECTURE I - (3201948-SS)**
CO1	Explain meaning and need of research in Architecture and its value in design, types of research
CO2	Explain research methodology related to architectural study, types and measurement of variables, sampling & sample selection, data collection tools as surveys, observations, experiments and from secondary sources
CO3	Explain importance of literature review to articulate a research
CO4	Prepare a research proposal defining appropriate data collection tools
5	**THIRD YEAR B.ARCH. - TERM II - BUILDING SERVICES IV - (3201950-P) (3201951-SS)**
CO1	Explain with sketches generation, propagation and properties of sound, design to control noises, materials and construction for acoustical treatment in buildings
CO2	Explain with sketches control of airborne and structure borne and good acoustical condition parameters related to architectural design
CO3	Calculate and apply reverberation time calculation and recommendation for acoustical treatment and explain sound amplification systems
CO4	Explain Fire prevention in a building with respect to cause of fire, passive and active measures considered for architectural design
CO5	Explain passive and active fire safety measures required for escape route, basement
CO6	Explain with sketches static water tanks and various types of Fire extinguisher installations required in building design
6	**THIRD YEAR B.ARCH. - TERM II - WORKING DRAWING II - (3201952-SS)**
CO1	Draft architectural working drawing set of ‘own design project’
CO2	Draft working drawing of interior layout and details of furniture, partitions, electrical fittings in larger scale

SINHGAD COLLEGE OF ARCHITECTURE

COURSE OUTCOMES – FOURTH YEAR - TERM II

	students at the end of the semester will be able to …
1	**FOURTH YEAR B.ARCH. - TERM II - ARCHITECTURAL DESIGN VII - (4201960-SV)**
CO1	Develop an architectural design program of complex of urban spaces and buildings preferably in a different socio-cultural-economic setting than that of the institute
CO2	Analyse and document the study area in a report on climate, soci0-cultural, economy, architectural typology, construction technology, urban fabric, services, traffic movement, etc.
CO3	Analyse site, develop concept and design progressively considering physical & socio-cultural context, circulation, building technology & services, aesthetics, development rules & regulations
CO4	Demonstrate the design with architectural drawings and model
2	**FOURTH YEAR B.ARCH. - TERM II - ADVANCED BUILDING CONSTRUCTION & SERVICES II - (4201961-SV)**
CO1	Design, draw and explain principles and construction techniques of auditorium with balcony and other required spaces with MEP, acoustics services
CO2	Design and draw detailed drawings with construction details of various building elements and elevation treatments, such as pergolas, porches, atriums, facades, curtain walls , landscape elements
CO3	Apply NBC of structural system in high rise / super high-rise structures under different loading conditions as gravity, wind, and seismic forces.
3	**FOURTH YEAR B.ARCH. - TERM II - URBAN STUDIES II - (4201962-SS)**
CO1	Explain urban planning process through survey, analysis, identification of requirements and problems and proposal for the same
CO2	Explain and analyse issues in urban areas through primary survey.
CO3	Describe conservation and Urban Design control rules
CO4	Describe Planning and Urban Design legislation
CO5	Describe urban economics and various government schemes related to that
4	**FOURTH YEAR B.ARCH. - TERM II - QUANTITY SURVEYING & SPECIFICATION WRITING II - (4201965-P)**
CO1	Work out rate Analysis of standard items of work based on prevailing market rates.
CO2	Prepare Checklists for different works in constructions. Also can prepare status table for building trades involved in Construction project.
CO3	Prepare Indent of Material of standard items of work based on prevailing market rates.
CO4	Work out quantities for Industrial structure with steel Truss and sheet roofing and prepare measurement sheet and abstract for all items of work.
CO5	Write detailed Specifications for Building Services like - Water Supply & Drainage, Acoustics, Electrification, HVAC installation
CO6	Write broad outline Specifications for installation such as elevators, escalators, Fire fighting, Accessibility
5	**FOURTH YEAR B.ARCH. - TERM II - PROJECT MANAGEMENT - (4201966-P)**
CO1	Discuss Project management from traditional to modern practices
CO2	Discuss phases and stages of project management and difference between Project Management and Construction Management.
CO3	Describe tenders and contracts in details
CO4	Describe various knowledge areas and relationship with each other
CO5	Define Resource management, Communication management, Risk management, Procurement management and Stakeholder management
CO6	Define Importance of Project Finance management, Construction Safety management, Facilities management, Design management.

SINHGAD COLLEGE OF ARCHITECTURE	
COURSE OUTCOMES – FIFTH YEAR - TERM I & II	
	students at the end of the semester will be able to …
1	**FIFTH YEAR B.ARCH. - TERM I - PROFESSIONAL TRAINING - (5201969-SS)**
CO1	Apply from practical experience to work with ethical and professional responsibilities
CO2	Maintain record in a diary to summarize work done in the office, site visits, meetings with clients, agencies, interaction with principal architect
2	**FIFTH YEAR B.ARCH. - TERM II - ARCHITECTURAL DESIGN PROJECT - (5201968-SV)**
CO1	Difine the topicfor Architectural design project and its relevance in present context.
CO2	Analyse and Evaluate primary , secondary data and case studies relevant to the topic to formulate the design program with due consideration to appropriate site for the design project , carrying out site analysis and synthesis for understanding locational advantages, topography,natural and manmade features in and around the site, climatic response, buildable zones,skyline and site context.
CO3	Derive and develope design concept/approach for the project considering the user perspective and behaviour, socio cultural responses and phenomenology of the space.
CO4	Demonstrate the design for the architectural design project with due consideration to integrated development of the site and landscape , contextual response and sustainability, design requirements, construction techniques and materials , structural details ,services.
3	**FIFTH YEAR B.ARCH. - TERM II - ELECTIVE VI - (520170-SS)**
CO1	Understanding of the fundamental concepts, principles, and provisions of environmental legislation, energy policies and acts. Understand key terms, concepts, and legal frameworks related to environmental protection,energy policies and sustainability.Awareness of Policy and Regulations
CO2	Knowledge of Green Building Principles,Green buidling ratings Systems in India and worldwide. Ability to Assess and Apply Green Building Strategies,Ethical and Social Considerations.
CO3	Understanding fundamental concepts and principles of Waste and Water Management , Strategies and Practices. Understanding of Water Quality Monitoring and Treatment
CO4	Understanding of Energy Management Concepts,explain key terms, such as energy efficiency, energy conservation, energy auditing, energy performance indicators, and energy management .integration of BMS with different energy-consuming systems.