

Madhav Institute of Technology & Science, Gwalior
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)
SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE

Course outcome First Year First, Second & Third Year, 2021

210112 - Architectural Design – I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to develop graphical understanding of visuals
	CO2	Students will be able to develop understanding towards application of color and texture
	CO3	Students will be able to illustrate geometric and organic forms
	CO4	Students will be able to create building forms through model making
	CO5	Students will be able to design products with emphasis on user, purpose, material & form
210113 – Building Materials	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to understand the use of appropriate materials for building and construction
	CO2	Students will be able to understand the detailing of building material and its applicability
	CO3	Student will be able to select appropriate building materials based on properties, suitability, and it's application
	CO4	Students will be able to understand the structural component and glazing methods and how to make fenestrations delicate with it's appropriate usage
	CO5	Students will be able to deal with effective budgeting which will reduce the cost of construction through use of locally available materials along with improved skills and technology without sacrificing the strength, performance and life of the structure.
210114 – Graphics I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to draw the elements of design and apply them in their drawings
	CO2	Students will be able to draw planar surface / conic sections in orthographic projections.
	CO3	Students will be able to draw solids and building elements in isometric projection.
	CO4	Students will be able to draw plans, elevations and sections.
	CO5	Students will be able to draw interior and exterior views.
210115 – Structure- I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Elaborate various principles of strength of materials and behavior of forces
	CO2	Establish relationship between the bending to the material property and geometry
	CO3	Apply pure bending and shear equation
	CO4	Analysis the stress and strain conditions due to bi-axial stress system
	CO5	Compute stresses at various level of beam
	CO6	Compute support reactions in simply supported, cantilever and over-hang beams for a given set of loading
210116 – History of Architecture- I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Visualize basic concepts regarding the historical and architectural development in ancient civilization as an integrated expression of art, culture, vernacular material and techniques of the place
	CO2	Observe diverse artistic and architectural expressions with regard to the historical context in which they are developed
	CO3	Illustrate visual and verbal vocabularies of Indian, Egyptian, west Asiatic and Eastern Architecture
	CO4	Evaluate architectural forms and space with reference to technology, style and character
	CO5	Reproduce with sketches, audio and visuals various architectural forms and styles
	CO6	Develop an appreciation of varied cultures and the resulting architectural productions which are unique in time and place & suitable to the lifestyle of its people
210117 – Workshop- I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Review various tools and techniques in visual communication and model making
	CO2	Incorporate basics of rendering, presentation skills & model making with various materials
	CO3	Associate properties of different materials and products for designing and model making
	CO4	Apply two dimension and three dimension compositions to designing and model making
	CO5	Produce art works from various materials individually and in team

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	CO6	Integrate these materials in creating their design models in further studies
210118 – Professional Communication	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to speak effectively
	CO2	Students will be able to communicate their design and ideas
	CO3	Students will be able to learn the techniques to speak publically.
	CO4	Students will be able to construct models out of metal
	CO5	Students will be able to write reports explaining their design and later on papers
210211 – Architectural Design -II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to discover Architectural elements & relevant architectural terms in response to Space planning and Understanding the Material, form & structure as well as Aesthetics & visual perceptions.
	CO2	Students will be able to design project overview & the design process to be followed through relevant presentations with appropriate use of Architectural, elements, spaces & terms by understanding noted projects & architects as well as Space planning.
	CO3	As a result of completing Time bound Problems of 6 hours to 48 hours students will be able to maximize the potential of designing within the time frame
210212 – Building Construction- I	COURSE OUTCOME- After completion of this course student will be able to-	
	CO1	Students will be able to deal with effective budgeting which will reduce the cost of construction through use of locally available materials along with improved skills and technology without sacrificing the strength, performance and life of the structure.
	CO2	Students will be able to depict materials and see the parts of buildings that are not seen otherwise
	CO3	Students will be able to understand the importance of walls in building, how they give security, divide available space of building to fulfil basic requirements and also safeguard humans from heat and cold.
	CO4	Students will be able to choose the appropriate building components with material suitability in his/her designs
	CO5	Students will be able to use a suitable roof for their projects
210213 – Graphics- II	COURSE OUTCOME: After completion of this course student will be able to	
	CO1	Students will be able to construct the perspective drawings of different types and using different methods
	CO2	Students will be able to construct two point perspective drawings for simple objects, its combinations, interior and exteriors of simple buildings
	CO3	Students will be able to Construct one point perspective drawings for simple objects, its combinations and various interior spaces
	CO4	Students will be able to develop shades and shadows in 2D and 3D drawings
	CO5	Students will be able to create plans, elevation sections for the same
210214 – Structure- II	COURSE OUTCOME: After completion of this course student will be able to	
	CO1	Students will be able to understand the various types of structural systems in architecture
	CO2	Students will be able to understand types of loads in buildings and properties of different materials used in structure.
	CO3	Students will be able to examine different reinforced cement concrete structures.
	CO4	Students will be able to analyze various steel structural systems.
210215 – History of Architecture- II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to apply various temple architectural forms and architectural expressions in their own design.
	CO2	Students will be able to apply the North Indian temple Architecture style and elements in their own design.
	CO3	Students will be able to apply the South Indian temple Architecture style and elements in their own design.

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	CO4	Students will be able to apply elements and concepts of Islamic in their own design.
	CO5	Students will be able to apply elements of forts and palaces in their own design.
210216 – Theory of Design	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Student will be able to Understand basic fundamental of design in natural and manmade environment
	CO2	Students will be able to Discuss best examples of built forms and situate them in the theoretical framework.
	CO3	Student will be able to Understand the significance of aesthetics, history in architectural design.
	CO4	Students will be able to develop architectural thinking through past and present work to link design & theory.
	CO5	Students will be able to Prioritize social responsibility for perfecting designs that improve the functions.
210217 – Workshop II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to create a replica model.
	CO2	Students will be able to Construct models using a CNC machine
	CO3	Students will be able to build architectural blocks and building models.
	CO4	Students will be able to construct detailed models.
	CO5	Students will be able to click professional architectural photographs
210311 Architectural Design – III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to design townhouses and villas
	CO2	Students will be able to design buildings related to education philosophy
	CO3/CO4	Students will be able to maximize the potential of their designing skills within the period
210312- Building Construction - II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to understand the role of metal in structure technology
	CO2	Students will be able to understand the technicality behind the foundation of a structure and its type.
	CO3	Students will be able to demonstrate their understanding through application in design and detailing of doors, windows & ventilators
	CO4	Students will be able to demonstrate their understanding through application in design and detailing of staircase & masonry.
	CO5	Students will be able to analysis application in working drawing.
210313- Graphics – III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to apply basic commands in AutoCAD to draw objects..
	CO2	Students will be able to draw complex objects using complex commands in AutoCAD.
	CO3	Students will be able to draw measured drawings.
	CO4	Students will be able to use Photoshop to illustrate building plans, elevations, etc. professionally
210314 - Surveying and Leveling	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to understand and apply surveying instruments and useful formulas used in surveying
	CO2	Students will be able to construct various scales used in surveying
	CO3	Students will be able to apply surveying instruments for surveys
	CO4	Students will be able to apply site survey techniques and will learn how to make layout of buildings.
	CO5	Students will be able to apply levelling and contouring on site surveys.
210315- History of Architecture-III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to apply Greek architectural expressions in their own design.
	CO2	Students will be able to apply elements of Roman architecture in their own design.
	CO3	Students will be able to apply elements of Egyptian architecture in their own design
	CO4	Students will be able to apply elements and concepts of West Asiatic Architecture in their own design
	CO5	Students will be able to apply elements of South East & East Asian architecture in their own design

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210316- Structures-III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	To interpret the structural design process and analyse design of RCC foundations for the purpose construction
	CO2	To analyses the structural design details and reinforcement of RCC slabs and staircase for the purpose of construction
	CO3	To interpret the load calculation for structural design of beams and lintel in RCC structure and analyses their structural design details for the purpose of construction
	CO4	To interpret the structural design of columns in RCC structure and the design details using column interaction diagram
	CO5	To interpret the design of flat slab and their structural details
210310 Biology for Architects	CO1	Students will be able to Define basic elements and principles of bio mimicry approaches
	CO2	Students will be able to Analyze natural environment and surrounding to achieve bio mimicry in architecture
	CO3	Students will be able to Experiment three dimensional patterns to achieve low energy consumption in buildings
	CO4	Students will be able to Apply theories and concepts of sustainability to built form and surroundings
	CO5	Students will be able to Designing and around the built structures, without harming our ecosystem
Second Year Fourth Semester 210413 Architecture Design – IV	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to analyzedata collected with relevance to the project by identification of a suitable design intervention that would improve the quality of life
	CO2	Students will be able to explore concepts and agglomeration of simple spaces with particular emphasis on the special needs of elderly, handicapped, etc.
	CO3/CO 4	Students will be able tomaximizethe potential of designing within the period.
210414- Building Construction – III	COURSE OUTCOME - After completion of this course student will be able to-	
	CO1	Students will be able to understand the role of concrete in structure technology
	CO2	. Students will be able to understand the technicality behind the foundation of a structure and its type
	CO3	Students will be able to analyze different types of slab and its different types on a structure.
	CO4	Students will be able to demonstrate their understanding through application in working drawing of basements ,retaining wall expansion joints
210415 - Building Services- I(Water supply & Sanitation)	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to identify the significance of water supply in urban and rural areas, its methods and requirements
	CO2	Students will be able to develop the understanding of drainage systems in buildings and its application
	CO3	Students will be able to analyze the significance of solid waste management in cities and their sustainable methods
	CO4	Students will be able to evaluate the sustainable methods of processing solid waste and strategies for waste management at city level
210416 - History of Architecture- IV	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to apply Industrial revolution architectural expressions in their own design
	CO2	Students will be able to apply elements of modernism style in Architecture in their own design.
	CO3	Students will be able to apply elements of DE constructivist style in Architecture in their own design
	CO4	Students will be able to apply elements and concepts of Neo-modernism & Postmodernism reactions in Architecture in their own design
210417 - Structures-IV	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Student will be able to understand the behavior of steel in construction, its forms and use in different structures
	CO2	Student will be able to understand the methods of designing angle sections, single and compound sections, compression members, lacings and battens

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	CO3	Student will be able to comprehend the design of principle and secondary beams in steel construction
	CO4	Student will be able to comprehend the types, selection, estimation of load and designing of steel trusses and girders for construction
	CO5	Student will be able to learn about the use of steel in construction of various long span structures
210421- Elective – 1 Ecology and Environment)	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to summarize elementary knowledge to earth's natural environment
	CO2	Students will be able to highlight emerging human activities creating serious environmental degradation
	CO3	Students will be able to relate urban ecology with sustainable technologies
	CO4	Students will be able to perceive the role of an architect/planner in sustainable development
	CO5	Students will be able to adapt various green/sustainable architectural techniques in one of the student's design problem
210422 - Elective – 1 (Society, Culture and Architecture)	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Students will be able to relate sociology with architecture and planning
	CO2	Students will be able to inspect basics of traditional architecture
	CO3	Students will be able to illustrate the site specific nature of architectural design
	CO4	Students will be able to distinguish cultural change and indigenous architectural practices
	CO5	Students will be able to apply rejuvenation in architecture
Third Year Fifth Semester 210514 Architectural Design – V	After completion of this course student will be able to-	
	CO1	Analyze the culture of a place – building types such as the cultural center comprising of spaces such as the art gallery, auditorium for performing arts, library etc.
	CO2	Identify the various common building materials such as brick, concrete, steel & glass.
	CO3	Examine the same building material through Material studio.
	CO4	Illustrate with materials to find suitable artistic & commercial expressions and the learning of design methods for healthcare buildings.
	CO5	Design commercial buildings integrating entertainment spaces, where the student is given exposure to the finer aspects of auditorium design.
	CO6	Express the design with drawings and model to support the concept.
210515 Building Construction - IV	After completion of this course student will be able to-	
	CO1	Summarize Properties and uses of cast iron, wrought iron, pig iron and steel. Market forms of steel: Structural steel, stainless steel, steel alloys
	CO2	Identify various steel members and joints for building industry.
	CO3	Prepare detail drawings of steel doors, rolling shutters etc.
	CO4	Illustrate modern methods of wall and floor construction
	CO5	Design interior wall paneling and suspended ceiling detail drawings
	CO6	Summarize thermal insulation techniques, acoustical treatment details for different spaces.
210516 Building Services-II (Electrical & Mechanical)	After completion of this course student will be able to-	
	CO1	Classify various technical aspects of electrical services.
	CO2	Summarize basic principles of illumination and practical application of lighting while designing a building
	CO3	Explain the importance, installation and working of essential services in buildings.
	CO4	Elaborate the importance and application of mechanical services while designing a building.
	CO5	Develop electrical distribution plans and layout for installation purposes.
	CO6	Develop a comfortable mechanical system for a building by means of various natural and mechanized measures
210517 Building Sciences & Energy Conservation	After completion of this course student will be able to-	
	CO1	Classify various climatic parameters on micro and macro level of site and design shelters according to different climatic conditions.
	CO2	Elaborate the concept of thermal balance in human beings and its statistical parameters.
	CO3	Apply various aspects of solar geometry in building orientation.
	CO4	Apply various principles of thermal design in buildings.
	CO5	Develop designs considering sustainable design tools, design methodology and innovative approach towards eco-designs.
	CO6	Explore various design strategies for building in different type of climatic zones

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210521 Architectural Photography & Journalism	After completion of this course student will be able to-	
	CO1	Identify the effects of Architecture on society
	CO2	Associate various interdependent elements.
	CO3	Apply visual recording techniques for documentation..
	CO4	Illustrate the understanding through varied visual and verbal tools.
210522 Vernacular Architecture	After completion of this course student will be able to-	
	CO1	Identify the effects of Architecture on a particular community.
	CO2	Associate the local customs, social systems, and climate with the evolving architecture.
	CO3	Apply the concept of Traditional knowledge systems.
	CO4	Associate the available materials and construction methods with local conditions
100005 Disaster management	After completion of this course student will be able to-	
	CO1	Study the various seismic zones
	CO2	Understanding various terminologies like recovery, rehabilitation, response, mitigation and their execution.
	CO3	Apply strategies and technology to overcome the harmful effects of disaster. Develop a design the disaster resistant structures.
210621 Architectural Design – VI	After completion of this course student will be able to	
	CO1, CO2, CO2 CO4 & CO5	The course should enable the student to: <ul style="list-style-type: none"> • Train the student to gather knowledge on the given design project based on books / literature and websites. • Make the student understand the complexity, functioning and salient features of the design project through organizing field visit, train them to document and present the findings. • Develop design ideas and create them.
Third Year Sixth Semester 210622 Building Services-III (Acoustic & Fire Fighting	After completion of this course student will be able to	
	CO1	To understand the principles of sound and acoustical requirements of various buildings
	CO2	To analyze the methods of sound reinforcement and noise control methods in enclosed space
	CO3	To learn the application of firefighting equipment in buildings
	CO4	To determine the significance of norms and standards in firefighting systems and its application
210623 Site Planning & Landscaping	After completion of this course student will be able to	
	CO1	Understanding role and importance of site planning in enhancing quality of building environment
	CO2	Learning about the interrelationship between nature and humans. Role of natural elements in environment
	CO3	Understanding the construction techniques of hardscape, contours, landforms and its application on site.
	CO4	Awareness about characteristic of various historical gardens and concepts of urban landscape in design
210624 Working Drawing	After completion of this course student will be able to	
	CO1	Student will be able to understand the various building drawings
	CO2	Student will be able to understand and draw various services plan used in architectural project.
	CO3	Student will be able to understand and write various specification of material required during execution of a project.

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	CO4	Students will understand various materials, finishing material used in architectural project.
	CO5	Students will be able to develop working drawing sets for load bearing and a frame structure architectural Design project.
210611 Elective III Housing	After completion of this course student will be able to	
	CO1	Understand the housing issues and importance of housing development
	CO2	Relate the socio economic aspects of site with its housing characteristics
	CO3	Identify various housing standards, guidelines, regulations, norms, amenities, etc
	CO4	Discover modern techniques for efficient and sustainable housing
	CO5	Categories different housing design process as per desired requirements
210619 Design Thinking	After completion of this course student will be able to	
	CO1	Students will be able to relate sociology with architecture and planning
	CO 2	Students will be able to inspect basics of traditional architecture
	CO 3	Students will be able to illustrate the site specific nature of architectural design
	CO 4	Students will be able to distinguish cultural change and indigenous architectural practices
	CO 5	Students will be able to apply rejuvenation in architecture
210701 Architectural Design – VII	After completion of this course student will be able to	
	CO1	Analyze and study, pre-design process, design process & conceptualization stages in design.
	CO2	Understand the materials and technology required to build the same.
	CO3	Understand the building byelaws and apply them to the project.
	CO4	Handle large scale buildings such as projects of progressively increasing complexity.
	CO5	Design the projects based on the concept of space and form, Innovate Visualization of projects using computer software is also acquired.
210702 Adv. Building Construction	After completion of this course student will be able to	
	CO1	Study behaviors of various non-conventional and long span structures
	CO2	Understand the concept of Shells and Space Frames.
	CO3	Design and detailing of building materials and components developed by research organizations like CBRI, SERC, NBO & BMTPC
	CO4	Appreciate the difference between RCC and pre stressed concrete.
	CO5	Identify appropriate tall structural systems, shells and folded plates and tensile structure for the space coverage
210703 Project Management & Building economics	After completion of this course student will be able to	
	CO1	Know about the methodology of executing a project.
	CO2	Understand the fundamentals of economics, Land economics and financing.
	CO3	Compute the money values and demand forecasting.
	CO4	Develop valuation of property/building through various valuation methods.
	CO5	Enhance the professional ability as an architect.
210704 Estimating and Costing & Specifications	After completion of this course student will be able to	
	CO1	Write specifications for various items of civil works with a view of controlling quality of work executed at site.
	CO2	Acquire sufficient knowledge of estimation in order that he/she could advice prospective clients on project viability and also monitor/ control project cost.
	CO3	Analyze different types of estimates and their suitability to different kinds of works.
	CO4	Calculate the quantity of different items of work using various estimating methods.
	CO5	Prepare BOQ's for item rate contract.
	CO6	Calculate the approximate estimate, detailed estimate for small scale building projects and low cost housing.
21708	After completion of this course student will be able to	
	CO1	Elaborate the concepts of eminent Town planners and their contribution to planning thought.

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Urban Planning	CO2	Create an overall understanding of classification of settlements, land-use, zoning and types of development plan.
	CO3	Apply simple Town planning techniques.
	CO4	Explore settlements, land-use, zoning, types of development plan.
	CO5	Develop an appreciation of the planning issues involved at the scale of a town or a city.
210801	After completion of this course student will be able to	
Architectural Design – VIII	CO1	Formulate an intellectual position, explored through architectural design, which reconciles the development of a critical brief with spatial and functional criteria.
	CO2	Conceptualize a brief for a design project, which, through engagement with a series of contexts, seeks to provide a critique of the built environment by proposing alternative spatial, formal, organizational or material solutions.
	CO3	Synthesize a design solution, which combines appropriate architectural expression, cultural response and the fulfillment of the functional requirements of a brief.
	CO4	Produce appropriate drawings, models and other media of an architectural design which explore, test and express its qualities of space, form, organization and response to physical and other contexts.
	CO5	Integrate appropriate technologies concerning structure, materiality and services into the design proposal.
	CO6	Effectively communicate the design or designs through an exhibition incorporating drawings, models, texts and other appropriate media.
210802	After completion of this course student will be able to	
Urban Design	CO1	Know about the urban forms and spaces.
	CO2	Understand the urban design issues at the city level.
	CO3	Analyze the difference between the history and the contemporary needs.
	CO4	Develop the strategies that are commonly required to overcome the urban issues.
	CO5	Develop understanding and strategies towards the society. They will be conversant with the problems in community living and how to address the same.
210803	After completion of this course student will be able to	
Professional Practice & Ethics	CO1	Identify the principal legislative, technical and professional factors influencing the design strategy of a building project.
	CO2	Describe the components and organizational structures and their interrelationships.
	CO3	Define the issues that an architect will consider with reference to building contract law
	CO4	Determine the factors effecting cost
	CO5	Explain the procedures to be followed for compliance with planning and building control regulations.
210804	After completion of this course student will be able to	
Dissertation	CO1	Understand the fundamentals of Research methods before attempting final year Project Thesis.
	CO2	Study and develop basic research principles and research methods.
	CO3	Develop a sustained and coherent argument on an agreed topic, supported by both secondary and primary sources
	CO4	Communicate the result of a systematic programme of research with clear identification of the topic, research issues, the context and the theoretical perspectives.
	CO5	Evaluate significant information sources referred to and draw coherent conclusions relevant to the topic and issues initially identified, from the observations, evidence and arguments presented.
	CO6	Develop the skill of report writing. Prepare a Dissertation report