MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

SCHEME OF EXAMINATION - **BACHELOR OF ARCHITECTURE** WEF

Course outcome First Year First, Second & Third Year, 2018

210101 - Architectural Design – I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Identify the elements and principle of design theory
	CO2	Associate various graphical elements
	CO3	Apply principle of design/additive & subtractive form (using 2d/ 3d compositions)
	CO4	Illustrate the color theory principles using color compositions & texture
	CO5	Evaluate the geometric & organic forms (2D & 3D in building)
	CO6	Develop analytical thinking towards spatial analyses of visual culture
210102 - Architectural Materials	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Classify different types of building materials used primarily in building construction work
	CO2	Analyze building materials and its influence on prevailing architectural styles
	CO3	Illustrate specific use of materials and ascertain their application
	CO4	finalize specific building materials for different types of buildings
	CO5	Consider local material and its application techniques for low cost construction
	CO6	Integrate the market survey of different types of material
210103 – Graphics I	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Visualize the language of architecture & buildings through as two dimensional and three dimensional representations
	CO2	Interpret architectural geometry by applying fundamental principles of drawing
	CO3	Develop the capability of ideation and 3D modeling using drafting tools
	CO4	Describe spatial relationship using sequential thinking
	CO5	Solve basic problems involving graphics and spatial manipulations for architectural applications to represent the future forms of her/his projects
	CO6	Express her/his ideas by drawing using representation techniques and tools in the spatial concept and
210108 – 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
	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

210105 – History of Architecture- I	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
210107 – 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
	CO6	Integrate these materials in creating their design models in further studies
210109 – Technical English	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Speak clearly effectively and appropriately in a public forum to a variety of audiences and purposes (LOTS1)
	CO2	Prepare and deliver oral presentations and arguments acceptable within the Engineering Profession effectively (LOTS3)
	CO3	Demonstrate knowledge and comprehension of major text and traditions in language as well as its social, cultural and historic context (LOTS3)
	CO4	Read a variety of text critically and analytically so as to demonstrate in writing and / or speech the interpretations of those texts (HOTS4)
	CO5	Interpret text written in English assessing the result in written and oral arguments using appropriate material for support (HOTS3)
	CO6	Implement professional work habits, including those necessary for effective collaboration and corporation with others (HOTS4)
210201 – Technical English	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Interpret architectural design fundamentals (Relationship between people to built forms & built forms to environment)
	CO2	Summarize different functional spaces and their space requirements
	CO3	Identify human standards of design based on ergonomics
	CO4	Analyze pre-design process, design process & conceptualization stages in design
	CO5	Design objects based on the concept of space and form by modifying and evaluating an existing space
	CO6	Express their designs through communication skills – verbal, script & graphics

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SCHEME OF EXAMINATION - **BACHELOR OF ARCHITECTURE** WEF

210202 – Building Construction-I	COURSE OUTCOME- After completion of this course student will be able to-	
	CO1	Elaborate materials and systems, their properties and applications, and their intrinsic relationship to structural systems and environmental performance
	CO2	Compare the material and construction techniques through site visit and market surveys
	CO3	Develop a fundamental understanding of the relationship of materiality to construction systems and techniques
	CO4	Illustrate basic components of a building with its construction details such as Foundation Footing, Wall section, Roofs, and Interior details
	CO5	Produce detail construction drawings sets of building components and construction techniques
210202 – Graphics- II	COURSE OUTCOME: After completion of this course student will be able to	
	CO1	Communicate their ideas through various drawings
	CO2	Visualize the design ideas from various angles
	CO3	Represent advance drawing techniques involving perspective, sciography
	CO4	Produce architectural drawings using perspective, sciography
	CO5	Prepare Measured Drawing of any historical building
	CO6	Integrate these techniques in creating their design drawings in further studies
210208 – Structure- II	COURSE OUTCOME: After completion of this course student will be able to	
	CO1	Identify the concept of various structural elements and system
	CO2	Illustrate the use of different structural systems in building industry
	CO3	Analyze the structural geometry based on strength and stability criteria
	CO4	Appraise the built environment based on specific structural system
	CO5	Analyze simple structural behavior using bending moment and shear force diagrams
	CO6	Apply basic principles of structural mechanics
210208 – History of Architecture-II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Summarize basic concepts regarding the historical and architectural development in ancient India
	CO2	Observe the diverse artistic and architectural expressions with regard to the historical context
	CO3	Illustrate visual and verbal vocabularies of Indian Architecture
	CO4	Analyze the diversity of imperial Indian Temple Architecture, Indian Mosques, Tombs, Forts, Cities, etc. including the buildings viewed as architectural masterpieces, and their urban settings
	CO5	Appreciate varied culture resulting in architectural productions which are unique in time and place & suitable to the lifestyle of its people
	CO6	Reproduce with sketches, audio and visuals various architectural forms and styles
	COURSE OUTCOME: After completion of this course student will be able to-	

210206 – Theory of Design	CO1	Integrate the design communication skills to enable to put forth the design ideas in graphics and literature
	CO2	Interpret the ideologies from works of architects and planners
	CO3	Develop awareness of the natural and built environments (past and present) through critical observation
	CO4	Analyze ideas from abstract thinking
	CO5	Develop an approach to architectural thinking
	CO6	Apply theoretical aspects of design to architectural design
210207 – Workshop II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Incorporate basics of rendering, presentation skills &model making with various materials
	CO2	Appreciate three dimensional implications of design and techniques of model making
	CO3	Criticize the properties of different materials for various products for designing and model making
	CO4	Review requirements and design consideration of complementing field of architecture and designing such as photography and set designing
	CO5	Develop small scale models using various building construction techniques
	CO6	Design a functional model for real life situation

Second Year Third Semester

210301 Architectural Design – III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Identify spaces responding to site condition and personal issues such as occupation, lifestyle, religion etc.
	CO2	Analyze how school designs respond to various education philosophy and grooming methods with help of case studies.
	CO3	Explore the integration of classroom spaces with outdoor play areas in school buildings.
	CO4	Produce sketches, models and photographs for analysis and design.
	CO5	Design school buildings that respond to a particular educational philosophy
	CO6	Design independent residential buildings in urban areas with concepts that respond to personal preference & taste, family lifestyle, culture & site conditions.
210302- Building Construction - II	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Classify Non-ferrous metals in terms of their properties, manufacturing and their applications in architectural construction.
	CO2	Explain the concept of foundation and wall in different type of masonry.
	CO3	Classify various types of foundation according to structure, considering necessary parameters.
	CO4	Draw types of timber doors, windows, ventilators and its joinery detail.
	CO5	Define types of Vertical transportation systems in a building.

	CO6	Identify Different water proofing and damp proofing materials and applied technology.
210303- Graphics – III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Explain fundamental principles of using graphical Software.
	CO2	Develop Basic skills in visual composition using Graphics
	CO3	Apply productivity tools of 2D drawings.
	CO4	Produce presentations for corporate clients-using CAD drawings, pictures, 3Dimages, text etc.
210304 - Surveying and Leveling	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Classify Surveying instruments by their function
	CO2	Explain the various types of modern survey
	CO3	Perform the contour surveying with the help of leveling instrument
	CO4	Apply the fundamental of chain and compass surveying for field survey
	CO5	Perform site survey and make layout of buildings.
210305- History of Architecture-III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Outline the chronological development of Civilizations across the globe.
	CO2	Observe different styles of Western (Christian) Architecture and it's historical importance
	CO3	Illustrate visual and verbal vocabularies associated with Christian architecture.
	CO4	Explain the evolution of architectural form & space with reference to Technology, Style and Character of the era.
	CO5	Analyze Architecture as an outcome of various social, political and economic upheavals.
	CO6	Draw sketches as the principal method of learning - about the prehistoric world, West Asia, Greece, Rome, Medieval times and Renaissance period.

210306- Structures-III	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Outline the features of IS code provisions regarding limit state method for designing concrete structures
	CO2	Explain basic principles of limit state design in reinforced concrete structural systems with detail structural drawings for the purpose of construction.
	CO3	Analyze the structural behavior of RCC buildings from an architect's perspective without detailed structural analysis
	CO4	Model design of different R.C. Structural components: Beam, Slab, Column, Stair and Foundation.
Second Year Fourth Semester 210401 Architecture Design – IV	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Explain the Settlement pattern in village and socio-cultural, geographic and economic aspects that shape the built environment.
	CO2	Analyze design of any rural settlement that evolved organically over a period of time.
	CO3	Analyze the housing typology, the locally available materials, craftmanship and integration of landscape with the built environment.
	CO4	Explore concepts of agglomeration of simple spaces with particular emphasis on the special needs of elderly, handicapped etc

	CO5	Develop presentation of concepts through 2D and 3D presentation including sketches and models.
210402- Building Construction – III	COURSE OUTCOME - After completion of this course student will be able to-	
	CO1	Explain the preparation of concrete, its construction methods, and its properties
	CO2	List properties, characteristics, strength, manufacturing, processing and application of materials such as cement, glass, paints and other finishing materials.
	CO3	Draw details of water proofing construction, fire proofing construction details.
	CO4	Outline types of Cladding systems and finishes
	CO5	Draw details of RCC Beams, Columns, Slabs, Staircases, etc
210403 - Building Services-I(Water supply & Sanitation)	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Outline water distribution components, sanitation systems and their functioning process.
	CO2	Explain Water supply, treatments and plumbing system for all type of buildings.
	CO3	Design Plumbing layout with working drawing and specifications for buildings.
	CO4	List waste water management, solid waste management and drainage systems for various building typologies.
	CO5	Apply all the above systems to Buildings, Small Campus and a Residential neighborhood.
	CO6	Produce plumbing and fire fighting layouts for various building typologies.
210404 - History of Architecture-IV	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Explain the basic terminology of the subject and know the chronology and typology of western architecture in the 20th/21st century.
	CO2	Identify the stylistic characteristics of different epochs in different western, Indian countries and relate them to structural/tectonic systems, architectural theories and socio-economic and cultural conditions of their emergence.
	CO3	Outline the life and masterpieces of the most renowned world architects.
	CO4	Explain types of Cladding systems and finishes
	CO5	Summarize modern design philosophies in the evolution of innovative architectural forms and designs.
210405 - Structures-IV	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Analyze structural behavior of various types of steel structural systems that are commonly employed in the building construction industry presently.
	CO2	Explain methods that are used to design a steel structural system for a specific condition & loading.
	CO3	Design simple and compound sections, Design of lacings and battens
	CO4	Design trusses – gusseted plate connections
210406- Elective – 1 (Ecology and Environment)	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Outline the importance of ecology and environment along with basic concepts of ecosystem.
	CO2	Analyze the relationship between man and its natural surroundings, focusing on negative impacts of man made activities on environment.
	CO3	Apply various practical applications of ecology in field of architecture to form new concepts of sustainability.
	CO4	Design with innovative methods by using sustainable materials to reduce the impacts of construction and urbanization.

	CO5	Develop environmental sensitivity.
210406 - Elective – 1 (Society, Culture and Architecture)	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Explain the importance of architecture and design through time and across cultures
	CO2	Outline what have been the major issues in the development of architectural design in socio- cultural context
	CO3	Analyze the place specific nature of architectural design
	CO4	Evaluate the architecture and its relationship to its historical, political, social, economic, technological contexts
	CO5	Evaluate the aesthetics related to more general systems of ordering within a particular society or a group.
210501 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.
210502 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 panelling and suspended ceiling detail drawings
	CO6	Summarize thermal insulation techniques, acoustical treatment details for different spaces.
210503 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.
210504 Building Sciences & Energy	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.

Conservation	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.
210505 Site Planning &Landscaping	After completion of this course student will be able to-	
	CO1	Summarize various elements of landscape architecture and design.
	CO2	Analyze different aspects of landscape architecture history through various design principles of urban landscape.
	CO3	Examine various parameters of site analysis along with different site influencing factors like topography, hydrology, soil ,landforms etc.
	CO4	Illustrate contours as representation of landforms and its application in analysis of various physical characteristics like grading, drainage pattern, etc.
	CO5	Apply the various techniques in landscape exercise which includes different site planning projects.
100006 Constitution of India/ Essence of Indian Traditional knowledge	After completion of this course student will be able to-	
	CO1	Elaborate basic concept of Traditional and modern knowledge system of India.
	CO2	Explain the significance of Yoga with respect to health.
	CO3	Elaborate the concept, significance and evolution of political science.
	CO4	Summarize the political views of various great Indian politicians.
	CO5	Apply the various aspects of Indian philosophy and art in contemporary architecture.
	CO6	Apply the various laws of the Indian government in implementation of projects.

210601 Architectural Design – VI	After completion of this course student will be able to	
	CO1	Summarize basic concept of spatial planning of different types of buildings such as Hospitality and Infrastructure projects
	CO2	Apply large span structural systems in design
	CO3	Apply building bye laws in building design.
	CO4	Apply various essential services in complex buildings.
	CO5	Analyze the project with respect to various environmental parameters.
	CO6	Design Hospitality and Infrastructure projects

210602 Building Services-III (Acoustic & Fire Fighting	After completion of this course student will be able to	
	CO1	Summarize concept of acoustics and its various aspects .
	CO2	Identify effect of noise while designing a building.
	CO3	Apply basic concept of fire fighting systems in different types of buildings.
	CO4	Identify various suitable sound insulation materials and techniques for construction .
	CO5	Apply the basic principles of acoustics in design.
	CO6	Explore various techniques of fire fighting services in large scale buildings.
210603- ELECTIVE 2-	COURSE OUTCOME: After completion of this course student will be able to-	
	CO1	Explain the concept of sustainability and various aspects of sustainable development.
	CO2	Elaborate the concept of urban ecology and its various dimensions.

Sustainable Architecture	CO3	Analyze the concept of ecosystem and its related significant terms.
	CO4	Examine modern building materials and methods which can be used for a sustainable design.
	CO5	Evaluate various green building rating systems based on their respective parameters.
	CO6	Classify different green building certified projects through their case studies.

ELECTIVE -2 Vastu Shastra	After completion of this course the student will be able to:	
	CO1	Elaborate the basic principles of Vastu Shastra.
	CO2	Define elements and various terms in Vastu Shastra.
	CO3	Decipher the importance of Vastu Shastra.
	CO4	Analyze the effects of Vastu in designing of building and site.
	CO5	Design taking Vastu shastra principles into design.

CO1	**Analyze** various finishing materials along with their installation methods.
CO2	**Illustrate** various relevant architectural and structural layouts of respective buildings
CO3	**Incorporate** various specification aspects during execution of a project.
CO4	**Develop** necessary service layout plans of different buildings.
CO5	**Produce** working drawing sets for load bearing and a frame structure architectural Design project.