

GANPAT UNIVERSITY										
FACULTY OF ARCHITECTURE DESIGN & PLANNING										
Programme	Bachelor of Design				Branch/Spec.	INSTITUTE OF DESIGN				
Semester	II				Version	3.0.0.0				
Effective from Academic Year		2021-22			Effective for the batch Admitted in			June 2021		
Subject code	3IIA04BMC	Subject Name			BUILDING MATERIALS AND CONSTRUCTION - II					
Teaching scheme					Examination scheme (Marks)					
(Per week)	Lecture(DT)		S/W/T		Total		CIE	SE	UE	Total
	L	TU	S/W/T	TW						
Credit	2	-	2	-	4	Theory	40	20	40	100
Hours	2	-	2	-	4	Jury/Viva/TW	-	-	-	-
Objective:										
<ul style="list-style-type: none"> The emphasis of the course is on “material driven design and construction systems.” The course introduces Brick, Stone and Wood as primary building construction materials and develops a comprehensive understanding of construction based on material property, size and shape. The focus is on understanding properties of materials, and various technical aspects related to masonry and frame construction and their finishing techniques. 										
Learning Outcome:										
<p>LO1: Understand different types of bricks, stones and wood, their physical and structural properties and its behaviour as a construction material</p> <p>LO2: Learn about brick and stone masonry construction technology</p> <p>LO3: Learn about wood frame construction technology</p> <p>LO4: Learn about component details in specific material i.e floor system, roof system, openings, staircase etc.</p>										
CONTENT & TEACHING UNITS										
Unit	Content									HRS
A	<p>BRICKS & BRICK MASONRY CONSTRUCTION</p> <p>(i)Brick as a building material: Types of bricks based on constituent materials and its manufacturing process, physical and chemical properties of different types of bricks</p> <p>(ii)Brick Masonry Construction: Sizes of bricks, Types of bricks, bats and closers etc., classification and terminologies, standard bond construction (English & Flemish), significance of mortars, stopped ends, quoins, piers, Junctions, jambs for various thicknesses, methods and techniques of masonry construction</p> <p>Basic principles of load bearing structures, foundation for load bearing walls, openings in load bearing masonry walls, non-load bearing walls, cavity walls</p> <p>(iii)Finishing details: Jointing, pointing, plastering, copings.</p> <p>(iv)Building components in brick: jack arch roof, brick arches, vaults and domes, reinforced brick roofs and walls, brick piers, brick paving</p> <p>(v)Exposed brick work: challenges</p>									24
B	<p>STONE & STONE MASONRY CONSTRUCTION</p> <p>(i)Natural stone as a building material: Geological Classification of rocks – stones (granite, laterite, quartzite, marble, slates), uses of stone, deterioration & preservation of stone, availability, properties and application of stones for construction</p> <p>(ii)Stone Masonry Construction: Types of stone masonry like Random Rubble, Coursed</p>									24

	Rubble, Ashlar, etc., significance of mortars, Basic principles of load bearing structures, foundation for load bearing walls, openings in load bearing masonry walls, non-load bearing walls, cavity walls (iii)Finishing details: stone as a cladding material, jointing, pointing and finishing details (iv)Building components in stone: construction of floors, arches, vaults and domes, stone coping, stone piers, stone paving	
C	WOOD-TIMBER FRAME CONSTRUCTION (i)Timber as Building Material: its physical properties and uses, defects, decay and preservation, seasoning. Industrial timbers, biproducts of timber such as ply wood, hard board, block board, particle board, etc with their properties and uses. Introduction to timber as described in Indian architectural treatises. (ii)Timber Frame construction: Understanding Timber frame construction for structural and non-structural building components: post & beam construction, floors, pitched roofs, partitions, openings (door/window), staircases with joinery and connections details	24
Reference Books		
1	Ching, Frank (Francis D.K.), 2014. Building Construction Illustrated. John Wiley & Sons, Inc. Hoboken, New Jersey	
2	Ching, Frank (Francis D.K.), Barry S. Onouye, Douglas Zuberburhler, 2009. Building Structures Illustrated: patterns, systems, and design. John Wiley & Sons, Inc., Hoboken, New Jersey	
3	Barry, R, 1999. Building Construction, Volume 1 to 5, Blackwell Science Ltd.	
4	Moxley R., 1961. Mitchell's Elementary Building Construction. B. T. Batsford, London.	
5	Kumar, Sushil, 2003. Building Construction, Standard Publishers, Delhi.	
6	Sharma S.K., Civil Engineering construction Materials. Khanna Publishing, New Delhi	

Note:

- Minimum one plate on each construction topic and study of material in the form of portfolio.
- Hands on session to be conducted to execute wall masonry with different materials in construction yard.
- Site visits to manufacturing units of brick, stone quarries, construction sites and case studies of vernacular construction systems to be arranged by studio teachers and report to be compiled by students.
- Market survey of materials should be carried out by students.

Note: Continuous Internal Evaluation shall be divided into A. 20% -Attendance B. 80% -Periodic Evaluation

CIE- Continuous Internal Evaluation, SE-Summative Evaluation (Jury/Viva/TW/Theory Exam),
UE- University Exams (Jury/Viva/TW/Theory Exam)