

**NIRMA University**  
**Institute of Architecture and Planning**  
**Bachelor of Architecture**  
**Semester-II**

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<b>2</b>	<b>2</b>	<b>-</b>	<b>3</b>

<b>Course Code</b>	<b>2AR263</b>
<b>Course Title</b>	<b>Building Construction &amp; Technology - II</b>

**Course Learning Outcomes (CLO):**

At the end of the course, students will be able to –

- Demonstrate an understanding of basic principles for planning, design and construction of load-bearing system of construction.
- Explain construction of building elements based on material-behavior and its relation to other element.
- Explain basic principles of building sub-structure.

**Syllabus: 15 weeks (4 hours/week)**

**Total Teaching hours: 60 Hr**

<b>Unit No.</b>	<b>Syllabus: Topic</b>	<b>Sub Topic</b>	<b>Teaching hours:</b>
1	Load bearing construction system	<ul style="list-style-type: none"> <li>• Understanding building elements (From foundations to parapet) using simple manufactured materials and simple constructional systems.</li> <li>• Understanding elements of load bearing system like foundations, walls, openings, lintels, columns, piers etc and their role in a load bearing system.</li> </ul>	16 hours
2	Foundations : Shallow and Deep	Understand basic principles of foundation design: <ul style="list-style-type: none"> <li>• Definitions, general requirements, safe bearing capacity of different types of soils, material and foundation type, etc</li> <li>• Shallow foundation: Strip, Isolated, combined and raft foundations and their construction techniques.</li> <li>• Introduction to Deep foundation: Grillage foundations, Piles foundations, Caisson foundations, etc.</li> </ul>	16 hours
4	Building Materials and properties	<ul style="list-style-type: none"> <li>• Understanding of behavior of elements in a construction system, in relation to the material properties:               <ul style="list-style-type: none"> <li>○ <b>Lime:</b> Sources of lime, classification and</li> </ul> </li> </ul>	16 hours

		<p>manufacturing process of lime, properties and use, tests on lime, etc.</p> <ul style="list-style-type: none"> <li>○ <b>Cement:</b> Composition of ordinary cement, function of cement ingredients, properties of cement – soundness, setting time, strength, etc. Grade of cement and different types of cement used in construction. Manufacturing process of ordinary cement in dry and wet method, packing and storage of cement, use of cement.</li> <li>○ <b>Mortar:</b> Sand, sources of sand and its classification, tests on sand, classification of mortar – lime mortar, mud mortar, surkhi mortar, cement mortar, preparation of mortar and its properties, use and selection of mortar for different construction work, etc.</li> <li>○ <b>Timber :</b> Varieties of timber, defects in timber, decay of timber, qualities of timber, seasoning, storage and preservation, properties and uses.</li> </ul>	
5	Carpentry Joinery Details	<ul style="list-style-type: none"> <li>• Behaviour of wood, wood-working and tools.</li> <li>• Types and application of timber joinery</li> <li>• Appropriate joinery for different loading conditions</li> </ul>	12 hours

#### References:

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