

BUILDING CONSTRUCTION I

ENAR 153

Lecture : 2
Tutorial : 0
Practical : 3

Year : I
Part : II

Course Objectives:

The main objective is to introduce the students to the basic process and techniques of building construction. The specific objectives are to gain knowledge about major building components in the substructure and superstructure, to gain knowledge of building construction materials and observe the practical implementations, field visits, focused on traditional Nepalese architecture.

- 1 Introduction (1 hour)**
 - 1.1 Construction techniques as per building design and working drawing
 - 1.2 Importance of proper construction work for design output
 - 1.3 Importance of national guidelines in building construction: Nepal Building Code (NBC) and Mandatory Rules of Thumb (MRT)

- 2 Site Works and Setting Out (2 hours)**
 - 2.1 Commencement and preconstruction of work vis-à-vis possession of site
 - 2.2 Preparation of site (Potential identification and clearing) and building layout

- 3 Soil Investigation (4 hours)**
 - 3.1 Soil types and their characteristics
 - 3.2 Foundations in weak soil with reference to black cotton soil
 - 3.3 Methods of improvement of soil bearing capacities

- 4 Excavation (1 hour)**
 - 4.1 Requirement of excavation
 - 4.2 Process of excavation
 - 4.3 Challenges of excavation (Hazards and safety)

- 5 Timbering in Trenches (2 hours)**
 - 5.1 Timbering in shallow foundations in hard soil to loose soil
 - 5.2 Timbering in shallow foundations in water logged soil

6 Foundation and their Types (6 hours)

- 6.1 Introduction to foundation
- 6.2 Functions and characteristics of foundation
- 6.3 Types of shallow foundation: Spread, strap, combined and raft foundation
- 6.4 Types of deep foundation: Pile, well and pier foundation
- 6.5 Foundation design in traditional Nepalese architecture

7 Damp Protection (4 hours)

- 7.1 Moisture movement in building
- 7.2 Sources, causes and defects of dampness
- 7.3 Methods of damp proofing, damp proof course (DPC), materials used for damp protection
- 7.4 Selection of appropriate DPC materials for different parts of building

8 Floor Structure (4 hours)

- 8.1 Introductions to floors, classification and construction materials
- 8.2 Ground floor: Solid ground floor and suspended timber floor
- 8.3 Upper timber floor

9 Masonry Wall (4 hours)

- 9.1 Introduction to wall types, materials and mortars
- 9.2 Stone masonry
- 9.3 Brick masonry
- 9.4 Concrete block masonry
- 9.5 Trends in masonry wall: Hollow block masonry (Concrete and brick), AAC block, others

10 Openings in Wall (2 hours)

- 10.1 Lintels, arches and their types
- 10.2 Construction materials

Theory Assignments

1. Field Visits and reports
2. Assessments with MCQ

Practical (45 Hours)

Drawing exercises related to each chapter and sub-chapter will be carried out during the practical sessions.

Final Exam

The questions will cover all the chapters in the syllabus. The evaluation scheme will be as indicated in the table below

Chapters	Hours	Mark distribution*
1,2,3,4 and10	10	10
5	2	2
6 and 7	10	6
8	4	6
9	4	6
Total	30	30

* There may be minor deviation in marks distribution.

References

1. Barry, R. (2024). The Construction of Buildings: Volumes 1–5. Wiley-Blackwell.
2. Chudley, R. (2016). Construction Technology: Volumes 1–4. Pearson / Longman.
3. Banz, H. (1983). Building Construction Details (Practical Drawings) (Latest Edition). Van Nostrand Reinhold Co.
4. Kumar, S. (1959). Building Construction (Latest Edition). Standard Publishers Distributors.
5. Singh, G. (2019). Building Construction and Materials. Standard Book House.
6. Rangawala. (2022). Building Construction. Charotar Publishing.
7. Varghese, P.C. (2020). Building Construction. PHI Learning.
8. Mackay, W.B. (1945). Building Construction (Latest Edition). W. B. McKay.